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EXTENDING A THEORETICAL MODEL:

NURSING CAREER DEPARTURE

A Dissertation

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ABSTRACT

The intention of this dissertation was to evaluate empirically the generalization of a theoretical model. The model (Tinto, 1987) studied was intended to predict departure from college. In this study the model was extended to departure from career. The basic premise of Tinto's theory is that voluntary departure from the college community is the result of a decreased integration between an individual and the institution.

Concepts of the Tinto model were used to develop the career persistence model, which depicts how the preoccupational attributes of academic achievement and educational attainment are a function of precollege goal commitment. These variables plus kinship responsibilities continue to affect the individual's job satisfaction, intentions, academic integration, goal commitment, and persistence throughout the career span.

To test the model, a sample of 270 nurses who were part of the National Longitudinal Study-1972 (NLS-72) from 1972 to 1986 was studied. The analyses of data were completed with a FORTRAN-77 program, GEMINI (Wolfle & Ethington, 1985). The program calculates indirect and direct effects and their significance for a specified recursive model.

The results of the study revealed the following significant findings. Goal commitment had positive effects on achievement and attainment in college, however it inversely affected academic integration. Achievement had direct effects on academic integration and indirect effects on job satisfaction through goal commitment. The level of attainment directly affected intention and later job satisfaction. The degree of academic integration had major importance across time as a contributor to job satisfaction. The first measure of Kinship responsibility inversely affected intention and persistence, but nurses with higher family responsibilities had higher job satisfaction later in career. However, ten years after college graduation, the only direct predictor of the final measure of career persistence was earlier persistence.

The study findings demonstrate the importance of employing methods that analyse the significance of both direct and indirect effects. Although the model did not show a significant causal relationship between most variables in the model and persistence, relevant findings were shown for other departure issues.

Chapter 1

THE RESEARCH PROBLEM

Introduction

"Nursing: An endangered profession", a 1987 article that documented the nursing shortage crisis, showed that shortages for registered nurses (RNs) have more than doubled from 6.3 percent in 1985 to 13.6 percent in 1986 (Richman). In addition, significant findings of the American Hospital Association reveal that in 1985, 17 percent of the hospitals reported RN vacancies and in 1986, 35 percent reported RN vacancies (1987).

The National League for Nursing (NLN) reports that enrollment trends for schools of nursing are down (Morrissey, 1987). Enrollments in educational programs that prepare RNs declined 8.1 percent in 1985, following a 5.3 percent decline in 1984. Basing their findings on a preliminary analysis, the NLN estimated the 1986-1987 decline to be 9 percent, with projections of "double digit annual enrollment declines through the rest of the decade" (Morrissey, p. 13). Equally disturbing is the more than 26 percent decline in RN educational programs over the last three years with projections of a 15 percent decline in RN graduations from 1986 to 1990.

The high attrition rate for schools of nursing compounds the shortage problem, where a reported one-third of the students who enter nursing withdraw before graduation (Munro, 1979). The problem of attrition from higher education has been studied for over 30 years by numerous researchers, but Munro deemed these studies inadequate for a variety of reasons. A major concern of Munro was the lack of a theoretical base for studies of dropout.

To remedy this situation, Munro's 1979 study of attrition from nursing education addressed these shortcomings through the use of a theoretical model of departure from higher education. The theoretical model used was based on Tinto's formative work on college departure.

The Tinto model is based on his review of the departure from college literature (1975), which faulted the lack of a clear definition of the term "dropout" and the lack of theoretical models to guide research in the field. Using earlier studies based on the social theories, "person-environmental fit" (Spady, 1979; Pascarella & Terenzini, 1983) and, possibly, "socialization", Tinto worked toward a theoretical model to predict departure from college. Although Tinto's model has an eclectic base, it is ultimately based on the work of social scientists Emile Durkheim (1897/1951) and Arnold van Gennep (1908/1960).

Tinto (1975, 1986), in his theoretical model, argues that departure from college is a result of the degree of integration between an individual and the institution.

Figure 1 is a depiction of the model. As Tinto (1987, p. 113) broadly explains, the model views an individual as they enter into a community (with certain personal attributes, intentions, and commitments) and follows them as they interact with other individuals in that setting. These personal experiences contribute to personal and institutional integration, which in turn may modify the individual's intentions and commitments as he moves through college. Tinto posits that individual attributes, skills, value orientations, pre-college educational experiences, and external commitments impact on departure from college directly and indirectly through their development of future intentions and commitments. Although Tinto recognized the role of personal/normative integration (social and academic integration) into a college, he sees these reflecting and modifying individual goals and intentions--some degree of academic and/or social integration must exist for continued persistence.

Tinto (1981a, 1981b) theorized that educational and occupational intentions or goals can reflect the likelihood of persistence beyond the college setting. He postulates that individual intentions and goals may increase the chances of persistence even in stressful situations. In support of these ideas, Tinto found that college grade point average (CGPA), occupational expectations, and graduate degrees were more predictive of occupational attainment than other factors.

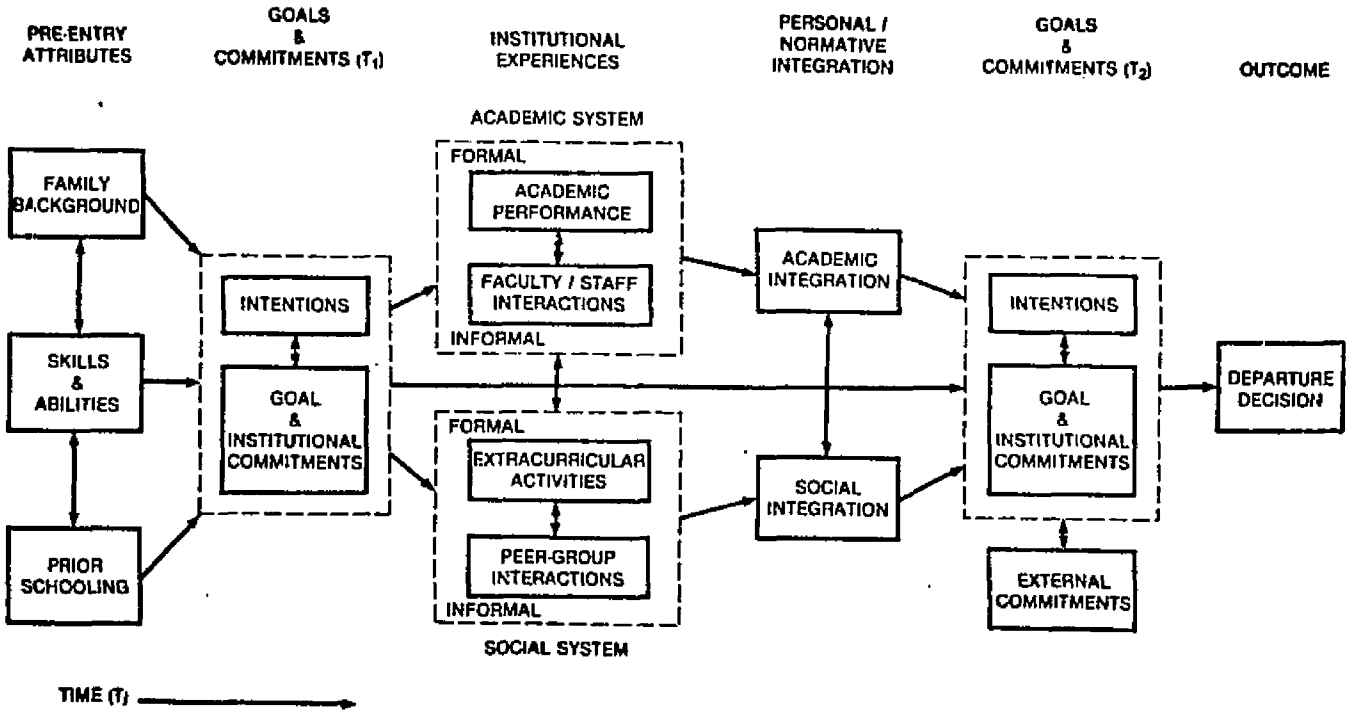


Figure 1. A model of institutional departure

Note: From Leaving College (p. 114) by V. Tinto, 1987, Chicago: The University of Chicago Press. Copyright 1987 by Chicago Press. Reprinted by Permission.

Tinto has, in fact, formed an interactive, longitudinal model of volunteer departure from institutions of higher education with his mergence and expansion of classic social science theories. Although his model concentrates on internal interactions in an institution, he does consider external commitments and the effect that they have on individual decisions regarding departure. This consideration of external impact also separates Tinto's theory from theories of socialization and environmental fit, which understate the role of external effects.

Purpose of the Study

The primary purpose of this study is to extend Tinto's model of institutional departure (1987) to nursing career departure so as to gain new insights into those factors that directly or indirectly affect career decisions. The study will focus on many concepts delineated in the Tinto model and will use data collected within a longitudinal design. The following theoretical framework will outline the structural basis for Tinto's model and its expansion to another dimension.

Theoretical Framework

Tinto's (1987) theoretical framework forms a basis for defining variables that contribute to individual departure decisions in higher education settings. His model is based on the work of two 19th Century social scientists (an anthropologist, Arnold van Gennep (1908/1960) and a sociologist, Emile Durkheim (1897/1951) and on the theories

of environmental-fit and socialization. Tinto used classical works of these two scientists and earlier studies in higher education to form his explanation for departure from institutions of higher education.

Person-Environmental Fit

Person-environmental fit was first demonstrated in the research of Starr, Betz, and Menne (1972). Expanding the theory of work adjustment, they postulated that individuals strive to develop and sustain social conformity by bringing appropriate occupational skills to their work environment. Thus, conformity becomes "satisfactoriness", different from mere satisfaction. The degree that individual needs influence institutional rewards results in a level of satisfaction. A state of equilibrium occurs when these two dimensions balance each other. Starr et al. used person-environmental fit as an explanation for departure from college and concluded that such a "correspondence" should increase the probability of persistence.

Socialization

Professional socialization, defined as that education process that produces skilled and committed workers who faithfully do the work of their profession, has been extensively discussed in the professional education literature (Simpson, 1979). Wheeler (Brim & Wheeler, 1966) placed professional socialization at one end of the socialization spectrum. This distinction allows a separation of the movement of professionals through the

education system from the movement of individuals through resocialization settings. Using Wheeler's description as a basis for a new interpretation, Simpson attempted to blend two diverse perspectives that had already been evolved by other observers of socialization. These perspectives are labeled "induction socialization" and "reaction socialization".

A main assumption of the induction method--the idea that "behaviors learned in one situation are retained in different situations later" (Simpson, 1979, p. 5)--is in opposition to the reaction school. Members of the reaction school doubt that situational learning makes any such transfer, primarily because they see students as the primary force in socialization. The followers of the induction method, on the other hand, place the faculty in the role of socializers. Simpson investigated the role of socialization in the development of both images and commitments that move beyond the role of the nursing student. Her conclusions emphasize that socialization is multidimensional, with both knowledge and skill equally forming the basis for perserverence in nursing.

Rites of Passage

Van Gennep (1908/1960), a contemporary of French positivists in the late 19th Century, described rituals or "rites of passage" occurring in stages of the individual's or group's life cycle. Occurring in three phases (separation, transition, and incorporation) the rites of

passage mark important milestones as an individual or group becomes a member of a new social system or changes status within the same system.

The rites of separation mark patterns of severance from past associates. These rites indicate both a decrease in interactions with and the downgrading of norms of the previous group of membership. Transition, the second rite described by van Gennep, marks the beginning of a new style of interactions with members of the new group in which membership is sought. During this stage the novel skills and knowledge required for the new group role are sought. The third phase, incorporation, marks two complex processes by the individual or group: the embodiment of the norms of the new group and personal identification with the new group (Tinto, 1987; van Gennep, 1908/1960).

Tinto (1987) uses the rites of passage concept as a format for "the longitudinal process of a student departure" (p. 94) and as a portrayal of student problems encountered in the passage through college. He points out that most college students who are not in highly structured settings lack participation in symbolic rituals and ceremonies that can clearly depict rites of passage.

In contrast, nursing students are isolated into structured subunits within institutions, and, as Simpson (1979) notes, professional students progress within programs in "well defined and often cohesive cohorts" (p. 14). Thorner (1955) describes the ritualism in schools of nursing

that tie the nurse to occupational duty through isolation from other students, while Goode (1957) calls it a "community within a community". Thorner's descriptions vividly show how rituals of nursing school parallel the rites of passage: (a) separation, student caps and uniforms which separate from past dress; (b) transition, the educational process involving hospital and classroom orientation to the subculture of nursing and to the adoption of myth; and (c) incorporation, graduation in white uniform and recitation of a pledge of self dedication to the betterment of humanity.

Oleson and Whittaker (1968) describe the socialization process of nursing students as the identification with nursing grows. The nurse's uniform is a "perpetual reminder of the deeper commitments of the self. . . .they formally signify an agreement to divorce oneself from the world at large and to join with similarly clad persons in a singleness of purpose" (p. 65).

Identification with the status of nursing has been shown to increase as students matriculate through school; those with low attachment may depart (Simpson, 1979). "Identification with status" is defined as the acceptance of title of "nurse" as a self description (Simpson, p. 137); the term seems to imply another realm of passage. Similar to occupational intentions or goal commitment used by Tinto (1987) and earlier described by Bean (1980) and Pascarella Dunley, and Iverson (1983), degree of intention/

identification would seem by extension to have a direct relationship to career persistence as well as college persistence.

Egoistic Suicide

Egoistic suicide, a major component of Tinto's framework, is not used as literally intended by Durkheim (1897/1951). The term, as used by Tinto, suggests that an individual not integrated into an institution of higher education will depart from that institution. Referring to two forms of integration, "social" and "intellectual" (1987, p. 53), Tinto extrapolates Durkheim's ideas into explanations for students' voluntary departure from institutions. Tinto (1987) identifies the disposition to depart with two attributes of individual students--expectations and motivations. He suggest that these factors be measured by intentions and commitments of individual students. Tinto defines intentions as "valued goals, educational and occupational, toward which activities are directed" and commitments as "the person's willingness to work toward the attainment of those goals both in the educational enterprise generally and within the context of a specific institution in particular" (1987, p. 110).

A Model of Career Persistence

Figure 2 portrays the extension of Tinto's model to career persistence. The model represents the concepts identified by Tinto (1987), yet portrays several differences from his focus on the classic input-process-output causal

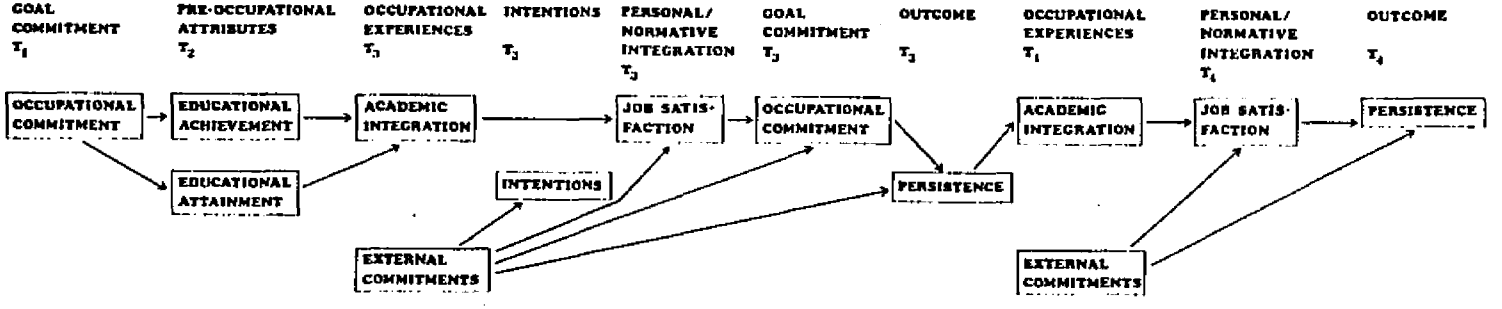


Figure 2. A model of career persistence extended from Tinto's Model (1987).

model in one setting. Thus, the question discussed in this study became: When the links between given attributes, goals and commitments, personal/normative integration, and external commitments lead to the attainment of a college degree--will these same variables predict persistence in a career?

Although Tinto's model specifies a longitudinal measurement of process and output, these measurements are limited to the length of individual college attendance. In the career persistence model, the period of measurement is extended to lifetime work patterns. Therefore, process-output measurements are theoretically infinite. This generalization of Tinto's model beyond the college community attempted to substantiate the direct and indirect effects of the total college experience through measurement of individual perceptions of college value.

The career persistence model assumes that the pre-occupational attributes of educational achievement and attainment are a function of precollege goal commitment. It further posits that precollege goal commitment, pre-occupational attributes, and external commitments subsequently influence the individual's occupational experiences, intentions, personal/normative integration, occupational goal commitment, and occupational persistence. In turn, the model projects that these above variables directly and indirectly mediate new measures of occupational experiences, personal/normative integration, and

occupational persistence years later. Finally, the model proposes that external commitments continue to effect personal/normative integration and occupational persistence.

The Tinto model has been studied within a wide range of diverse programs and institutions in higher education settings (Munro, 1979; Pascarella, Duby & Iverson, 1983; Pascarella & Chapman, 1983; Price & Mueller, 1981; Pascarella & Terenzini 1980). Each study addresses college students, with the research ending at the point of individual decision to depart or persist. None of these studies projects the model to persistence in career or occupation, even though Tinto points out the possibility of greater persistence when educational goals are tied to occupational goals (1987,p. 111).

The Tinto theory of departure has thus far been applied only to higher education settings. The applicability of Tinto's theory was tested further by this application to the longitudinal following of individuals after graduation. This expansion extended the generalizability of the theory beyond college enrollment and higher education settings. Maintaining many of the original concepts of the model, while extending the model to a longitudinal study of career paths, tested its authority as a predictor of departure within another setting and subculture.

The Hypothesis

This study investigated the extension of a theoretical model designed to analyze departure from higher education

shown in Figure 1 (Tinto, 1987, p. 114) to persistence in career (Figure 2). The variables used to measure the career persistence model are discussed below. Following is the hypothesis tested for this study:

There are positive direct and indirect effects of a set of variables (which include academic achievement, academic attainment, intentions, goal commitments, academic integration, kinship responsibility, and job satisfaction) on long term career persistence of individual nurses. (Structural equations which represent the direct and indirect effects of the hypothesis are shown in Appendix A.)

Definition of Terms

Here variables are defined, along with the quantifications which apply the definitions to the present study. Variables used in this study are classified as: (a) goal commitment-1 and -2; (b) academic achievement; (c) intentions; (d) academic attainment; (e) academic integration-1 and-2; (f) job satisfaction-1 and -2; (g) kinship responsibility-1 and -2, and (h) persistence-1 and -2. The variables, kinship responsibility-1 and -2 and goal commitment-1 are considered as exogenous (variables explained outside the model). The others, academic achievement, academic attainment, intentions, academic integration-1 and -2, job satisfaction-1 and -2, and career decision-1 and -2, are considered as endogenous variables (variables explained inside the model). Table 1 gives a concise breakdown of variables and numbers of items.

Table 1

Variable Descriptions and Numbers of Items Used for Model of Career Persistence

Variables	Definition	Items
Goal Commitment-1	Individual career plans.	1
CGPA	Cumulative GPA at time of completion of nursing program.	1
Nursing degree	Type of degree received.	1
Intentions	Level of education and occupation desired.	2
Goal Commitment-2	Individual career plans.	1
Academic Integration-1	Perceived incorporation of nursing preparation into occupation; satisfaction with nursing preparation.	17
Academic Integration-2	Same as above.	8
Job Satisfaction-1	How satisfied with certain aspects of job.	12
Job Satisfaction-2	Same as above.	11
Kinship Responsibility-1	Marital status, number of children, and percentage of support for family.	3
Kinship Responsibility-2	Marital status, number of children, and financial arrangements within household.	3
Persistence-1	Reported employment status in 1979.	2
Persistence-2	Reported employment status in 1986.	2

Academic Achievement

Academic achievement is defined as the cumulative grade point average (GPA) recorded on the transcript at the time of graduation from a school of nursing in the Postsecondary Education Transcript Study (PETS). For the purposes of this study, GPAs not in a common metric of 4.00 to 0.00 were treated as missing cases. Therefore, the higher the CGPA on a 4.00 scale, the higher the academic achievement.

Educational Attainment

Educational attainment is defined as the level of degree achieved by the nurse candidate. The PETS contains information gained from institutions of higher education for degree earned for individuals in the National Longitudinal Study-Class of 1972 (NLS-72) (Riccobono, Henderson, Burkeimer, Place, & Levinsohn, 1981a). The degrees earned for registered nurses are from three programs; the associate degree (AD), the diploma (Dip), and the baccalaureate (BS). These degree types represent the standard entry levels for registered nurses and are determined by the length of the program and requirements other than nursing. The AD programs are generally based in community colleges and are two years in length. The diploma programs remain essentially hospital-based, three year programs. The BS programs are usually four years in length. The degrees will be represented by 1, 2, and 3; the higher the value, the higher the degree.

Goal Commitment-1

As defined by Riccobono et al. (1981a), goal commitment is measured by a question in the base year questionnaire that seeks information on future aspirations of the individual. Of the fourteen choices, the choice that isolates "PROFESSIONAL, such as registered nurse", rather than all of the other choices, measures the highest degree of career intention for nursing. Scaling is 1 for "PROFESSIONAL" and 0 for other responses. (See Appendix B).

Goal Commitment-2

In the Fourth Follow-up this definition was synonymous with "career plans" for the individual. The items used addressed the kind of work that the respondent supposes he will be doing at age 30. The index used is obtained by assigning a 1 to PROFESSIONAL and 0 to all other responses. This construct is not itemized in the Fifth Follow-Up Survey; thus, no substitution was deemed content valid for inclusion in this study. (See Appendix C for these items and scaling).

Intention

Intention was not measured by the 1975 Tinto model. First identified by Bean (1980), further developed by Pascarella et al. (1983), and incorporated in the 1987 Tinto model, intention is defined as "the level of education and occupation desired by the individual" (p. 115).

In this study intention was defined as the desire to continue working in the same kind of job and was treated as

a composite of two items in the Fourth Follow-Up questionnaire. The scaling of these items is based on a 5 to 1 index and was obtained by assigning a 3 to "Yes", a 2 to "Don't Know", and a 1 to "No". A mid-score was assigned to "Don't Know" because this response was rated more positive than "No" on each question. These items were dropped from the Fifth Follow-Up questionnaire, and no other items were deemed content valid to use for this study. Therefore, this variable will not be used after the 1979, Fourth Follow-Up. (See Appendix D for these items and scaling procedures).

Academic Integration-1

This construct is defined as the individual's ability to integrate past schooling into her occupational life and to express satisfaction with past school experiences. Three questions from the Fourth Follow-up of the NLS-72 will be used to measure this variable. Scoring will consist of a: (a) raw score for nine items on "relatedness of schooling to job" (these nine items are scored with a 1 or 0); (b) raw score for six items of "satisfaction with schooling", a Likert type score of 4 down to 0 for each item for a total of 24 maximum points possible ("no opinion" is scored as 0, as this was judged a lower response than very dissatisfied); and (c) total score for "experiences in last year of higher education" based on items e and g; scoring consists of 1 or 0 for each item, for a total maximum score of 2 and a low of 0. The scale had a high of 7 and a low of 1.

Additive scores for all items had a range from a high of 38 to a low of 0. The higher the score, the higher the academic integration. (See Appendix E for these items and the scaling).

Academic Integration-2

The Fifth Follow-up did not contain all four items used in the operationalizing of academic integration-1; therefore, only two of the above items could be included in this measurement. These items are: (a) total score for "experiences in last year of higher education" based on items e and g; scoring consists of 1 or 0 for each item, for a total maximum score of 2 and a low of 0 and (b) raw score for six items of "satisfaction with schooling" a Likert type score of 4 down to 0 (no opinion received a scale of 0, as it was judged to have less value than very dissatisfied). The higher the score, the higher the academic integration. (See Appendix F for scaling).

Job Satisfaction

This construct is measured by items which determine the degree of satisfaction with the occupation and employer. It will be used to measure the degree of personal/normative integration with the occupation.

Fourth Follow-Up: One question was used to measure the degree of job satisfaction: (a) "How satisfied were you with the following aspects of the job?". These twelve items are scaled from 4, for "very satisfied", to 1, for "very dissatisfied". The possible points are scaled from 12 up to

48; a scale developed for this dissertation. The index of measurement is derived from a scale of 1 to 5; with the higher point meaning satisfaction. Thus, the higher the score, the higher the degree of job satisfaction. (See Appendix G for this index).

Fifth Follow-Up: One question was used to quantify the degree of job satisfaction: (a) "How satisfied were you with the following aspects of your present or most recent job?" Twelve items were used, and rescored, from a 1, for "very dissatisfied", to a 4, for "very satisfied". A "no opinion" item was coded as "0" for this dissertation--its mid-point placement on the original scale implied a false neutrality. The possible points will range from 48 to 12. The index of measurement is derived from a scale of 1 to 5; with the higher point meaning satisfaction. Thus, the higher the score, the higher the degree of job satisfaction. (See Appendix H for this item).

Kinship Responsibility

This construct was conceptualized by Tinto (1987) as external commitment and was defined as those experiences that impede continuation of education or occupation. For the purposes of this study external commitment was labeled as kinship responsibility. The term Kinship responsibility was suggested in the Price and Mueller study (1981) where the term was restricted to the degree of obligation to local Kin in the community of employment. In this study the variable was measured by questions within the NLS-72 that

identified level of conjugal family responsibility (married family) for the nurse.

For the purposes of this study, this concept was defined as the degree of individual obligation to conjugal family. The variable is measured by an index obtained from the NLS-72 Fourth and Fifth Follow-Up that ascertains marital status, number of children, and financial arrangements in the participant's household. These questions were not requested in a consistent manner. Therefore, the measures used differ from the Fourth to the Fifth Follow-Up Surveys. However, in each measure the higher the number of total points the higher the kinship responsibility. (See Appendix I for these items and scaling).

Career Persistence

The Fourth Follow-up of the NLS traces retrospectively the past employment for the years 1978, 1977, and 1976 and current employment for 1979. The Fifth Follow-Up of the NLS traces past employment for the years 1985, 1984, 1983, 1982, 1981, and 1980 with current employment for 1986. Thus, annual self-reported employment status for each participant has been collected for an eleven year period. The years that will be used in this study are 1979 and 1986, years selected because they reflect employment status in a year of survey collection--making employment information obtained represent a higher degree of accuracy for each individual participant. Both surveys asked the following: (a) "what were you doing in the first week of" with insertion of

appropriate dates--October 1979 and February 1986 and (b) "what kind of job or occupation did you or do you have" with a write in response requested. Scaling is dichotomous: Employed full or part time as an RN or nurse will receive a 1, all other responses will receive 0. (See Appendices J and K for these items).

Model of Career Departure

The specific model tested in this study is depicted in Figure 3. The variables are based in part on Tinto's theoretical model of the process of departure from higher education. The measurements for this study come from the NLS-72. The figure combines variables not influenced by any other variables in the model (exogenous variables) and variables affected by other variables in the model (endogenous variables) (Asher, 1983). The variables are the three exogenous variables (goal commitment-1 and kinship responsibility-1 and -2) and the ten endogenous variables (academic achievement, academic attainment, intention, goal commitment-2, academic integration-1 and -2, job satisfaction-1 and-2, and persistence-1, and the ultimate dependent variable, persistence-2. Although the problem studied was departure from nursing, the term persistence was used in the model to maintain positive correlations, as suggested by Munro (1979, p. 5).

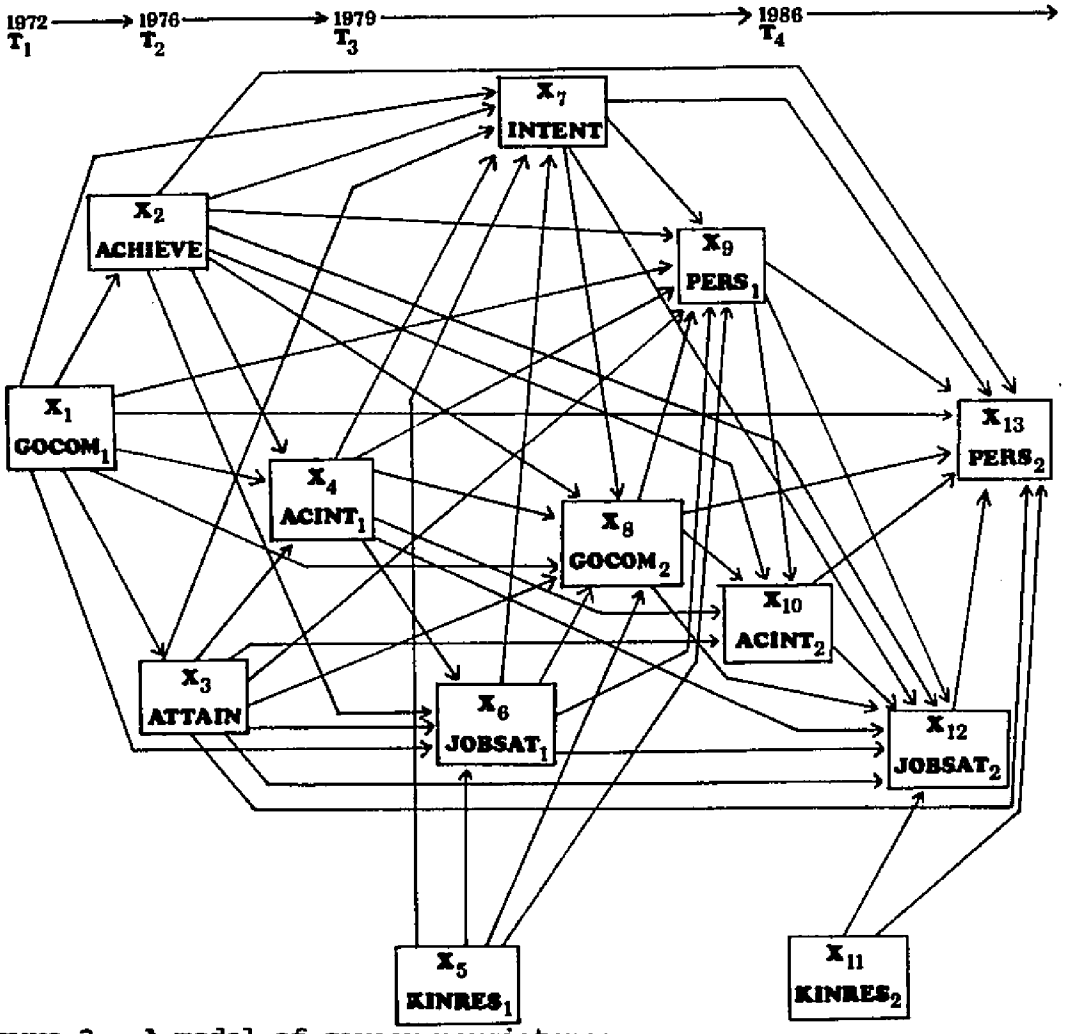


Figure 3. A model of career persistence

1972
GOCOM 1--GOAL COMMITMENT

1976
ACHIEVE--ACADEMIC ACHIEVEMENT
ATTAIN--ACADEMIC ATTAINMENT

1979
ACINT 1--ACADEMIC INTEGRATION
KINRES 1--KINSHIP RESPONSIBILITY
JOBSAT 1--JOB SATISFACTION
INTENT--INTENTIONS
GOCOM 2--GOAL COMMITMENT
PERS 1--PERSISTENCE

1986
ACINT 2--ACADEMIC INTEGRATION
KINRES 2--KINSHIP RESPONSIBILITY
JOBSAT 2--JOB SATISFACTION
PERS 2--PERSISTENCE

The specification of the causal model to be used for this study is essential for its proper evaluation and for the testing of the hypothesis. Therefore, a brief discussion of the logic behind its development and an overview of the model to clarify Figure 3 follows.

The model is arranged in time sequence to portray the temporal order of the longitudinal study. The first and eighth variables, goal commitment, have major importance within the model. Their placement impacts directly and indirectly on principal endogenous variables in the model. Its importance is substantiated by Munro (1981), Tinto (1975, 1987), and Pascarella and others (1979, 1980, 1983).

The second set of variables, academic achievement and educational attainment, is used to measure what Tinto (1987) refers to as individual attributes. These observable variables were selected because of the literature support for these measures as contributors to occupational attainment (Alwin, 1974; Hafner & Owings, 1988; Price & Mueller, 1981).

Academic integration, represented by the fourth and tenth variables, is theoretically based in person-environmental fit and socialization and is an integral part of Tinto's model (1975 & 1987). It is used during college studies as a measurement of individual academic performance and the extent of individual successful interactions with the institution (Tinto, 1975 & 1987). Consequently when projected into this current study, it became a measure of

the individual's perceptions of usefulness of past schooling in occupational attainment.

Kinship responsibility, demonstrated by the fifth and eleventh variables, is based on Tinto's premise that commitment external to the college community may cause conflict that leads to departure (1987). A review of the literature reveals that kinship responsibility has conflicting effects on career persistence and longitudinal studies are unavailable (Durkheim, 1897/1951; Lennon, 1987; Price & Mueller, 1981).

Job satisfaction is represented by the sixth and twelfth variables in this study. In the causal order, placement of job satisfaction has been mandated by previous research findings that revealed its effect on intentions and commitment (Price & Mueller, 1981).

Intention, the seventh variable, is causally placed after job satisfaction and before goal commitment-2. The causal order was determined by the research of Price and Mueller (1981).

The ninth variable, persistence, is placed so that it has the role of both a dependent and an independent variable. When measured as the thirteenth variable, it assumes the role of the ultimate dependent variable for previous variables in the model.

A detailed description of the variables to be used in this study can be found earlier in Chapter 1. In addition,

Chapter 3 will precisely outline the causal model formation and variable organization.

Significance of the Problem

The shortage of student and graduate RNs is a problem for nursing educators and those involved with patient care decisions. The American Association of Colleges of Nursing (AACN, 1987) reports a declining pool of students who seek nursing as a career choice.

Another view of the departure from career issue was recently addressed by Smart and Ethington (1988). They view research about departure from career as an "important element in the relationship between higher education and the work place" (p. 2). They stress that a current reason for research in the area of career persistence is the increased accountability demanded of educators by employers of graduates. Responsibility for post-graduation career behavior of graduates is asked of the educator because employers desire employees who will persist in both the occupation and the institution.

In addition to the lack of theory based research, other reports and studies give conflicting employment patterns for RNs (Aiken 1983; Aiken & Mullinix, 1987; Greenleaf, 1983; Iglehart, 1987; & Young, 1987). An example of this conflict is the Aiken and Mulinix (1987) study which reported an 80 percent employment rate for currently licensed RNs, while, Greenleaf (1983) gives a figure of 66 percent employment for RNs, licensed and unlicensed. In support of her argument,

Greenleaf contends that including only RNs currently licensed in employment figures gives a false labor force participation rate.

Whatever figures are used, the impact of the decreasing student pool and the apparent shortage of available RNs is a new and compounding addition to a recurring, historical pattern of reported nurse shortages. Many reasons are given for the decreasing pool of nurses, the departure from nursing, and the cyclical nature of these phenomena, but none of them are based on longitudinal collections (Curtin, 1987; Fagin, 1987; McCloskey & McCain, 1987; Steck, 1981).

The triple problem, (a) the lack of theory based research on nursing career departure, (b) the dependence on cross-sectional data, and (c) the use of inconsistent employment figures, has led to inadequate clarification of the issues--the causes of departure have not been defined or resolved.

This study will be significant, because it will:

1. test the expansion of a model developed to predict departure from higher education settings to a model predictive of career departure.

2. determine a labor force participation rate for a sample of registered nurses.

3. define the role of the university in occupational attainment and career persistence for a sample of nurses.

Chapter 2

LITERATURE REVIEW

This chapter contains the literature review. The expansion of Tinto's theory of departure from higher education will be further clarified by a presentation of the theoretical and literary background of variables identified for this study.

Tinto's theory has a base selected from various sources, although it is ultimately structured on the work of social scientists Emile Durkheim and Arnold van Gennep. The substructure of this base is partially evolved from the theories of person-environmental fit and socialization (Pascarella & Terenzini, 1983; Tinto, 1987).

In the last twenty years the majority of studies of nursing career perseverance have not focussed on theory-based research (Link & Settle, 1980; Nolan, 1985; Prescott & Bowen 1987; Sheridan & Abelson, 1983). Theories now being investigated range in perspective from those borrowed from the social sciences and economics, to those generic to nursing. Because this study's purpose is to extend a theory from higher education into the realm of nursing career persistence, a brief history of its adoption into nursing research will be given.

Munro (1979, 1980) used the formative Tinto model to investigate departure from schools of nursing for a sample of nursing students. The formative Tinto model lacked the variables of "intention" and "external commitment". Tinto did, however, include discussion of influences external to the college environment in his 1975 article, but use of these concepts was only later included in the model through the research of Pascarella and Terenzini (1983) and Pascarella, Duby, and Iverson (1983).

Munro (1979, 1980) incorporated variable sets in her research specified by Tinto's model. These variable sets addressed background variables (individual attributes, high school grades, parental aspirations and self educational aspirations, social and academic integration, institutional and goal commitment) and a tri-level observation of persistence--nursing, institution, and higher education. She selected all students from the National Longitudinal Study (NLS-72) who elected nursing as their college major.

The results of the path analyses of the above study (Munro, 1979, 1980) revealed that her model explained 34 percent of the variance for associate degree students and 19 percent of the variance for baccalaureate students. She concluded that academic integration and aptitude were the strongest predictors for baccalaureate students. These findings are in contrast to the thesis of equality that Tinto perceived for social and academic integration's effects on departure decisions (1975). Yet these findings

support the 1983 research of Pascarella, Duby, and Iverson which found that academic integration explained almost twice as much variance in departure as social integration.

Tinto adopted his current model (which incorporates external commitment and intention in a relationship with other model variables) in his 1987 book, Leaving College (See Chapter 1 of this study). Even though his newly publicized and refined theory has not yet surfaced in the critical literature, this study is based on his model. Tinto has expanded his theory beyond its base in the social sciences; further extending his theory to other settings will add to the theoretical validity that the theory already has demonstrated.

The following section of this chapter will give the theoretical and supportive background for each variable to be used in this study of nursing career persistence.

Goal Commitment

In the literature on departure from higher education, commitment to college completion is often an "accentuating" or "compensatory" effect to overall persistence (Pascarella & Terenzini, 1979). These descriptions suggest that commitment to goal is in fact a support phenomenon that may not itself operate in a vacuum.

Pascarella and Terenzini (1980) incorporated goal commitment as a construct to develop and test an index of integration in higher education. They hypothesized that as commitment increases, persistence increases--and their

results were consistent with this hypothesis. Tinto (1987) theorized that student goal commitment to a career increases persistence in college; it may even be the "single most important determinant of persistence in college" (p. 46).

Studies of occupational persistence in institutions frequently test the variable of organizational commitment. Werbel and Gould (1984) applied the concept to both new and tenured nurses. They found an insignificant relationship between commitment and turnover for new nurses and even an inverse relationship of these variables for tenured nurses. They conject that commitment may decline in response to a need to justify departure, rather than decreased commitment leading directly to departure.

An examination of college effects on occupational attainment seven years after high school completion revealed that predictive powers of commitment were non-conclusive. In a cross-sectional study, Alwin (1974) concluded that the effects of commitment are stronger for college completion than for occupational status. He noted the possible interference of spurious factors--selection of college and length of college attendance.

Extending a unique theoretical model to employee turnover of nurses, Sheridan and Abelson (1983) faulted studies that use cross-sectional design and studies that assume isolated, continuous employee outcome behaviors. The complex "cusp catastrophe model" depicts a single withdrawal dimension and "a two dimensional control space of commitment

and tension" (p. 420). Their extended model of the cusp catastrophe theory offers a dynamic, qualitative approach to the phenomena of occupational withdrawal. The model allows behavior to be viewed as a discontinuous variable within "a dense set of time paths that represent the population of individual movements through withdrawal" (p. 421). Thus the effect of commitment was measured even as the individual moved from a state of retention to termination. The quasi-longitudinal model predicted 55 percent of the leavers. However, when the data were analyzed using linear regression as a comparison to the cusp catastrophe method, regression analysis explained an insignificant 2 percent of the variance of turnover.

Academic Achievement

Cumulative college grade point average (GPA) is largely overlooked in the nursing literature as a basis for career persistence. However, GPA is recognized as a predictor of persistence in nursing programs (Munro, 1979, 1980) and as a predictor of success on the Licensure Examination of Registered Nurses (NCLEX-RN) (Quick, Krupa, & Whitley, 1985). Although social scientists have observed the relation between the attainment of education and the effect on occupation, few have examined the level of achievement and the effect of this process on occupational persistence. The works of Tinto (1980, 1981) and Hafner and Owings (1988) are notable exceptions.

Tinto (1980, 1981) found that persons in professional occupations were more likely to have achieved higher grade point averages than those in business-management occupations. College performance had a direct effect on occupational attainment. The strength of academic achievement appeared to overcome lower social status and lower quality of the college attended for occupation attainment during the seven years studied.

Hafner and Owings (1988) reviewed NLS-72 data for a complex multivariate study on teacher work patterns. They found that academic achievement was negatively associated with persistence in a teaching career. Those finishing their teaching degree with the highest academic records had never taught or were not teaching in 1986.

Educational Attainment

The effect of the level of educational attainment on occupational status has been reported in a variety of studies (Ezrati, 1987; Greenleaf, 1983; Tinto, 1980). Greenleaf, in a study comparing nurses, teachers, and a composite group of women from other predominately female fields, found that a higher educational degree increased participation in the work force for teachers, but not for nurses and others. Supporting these findings, Ezrati, using a regression model to determine the relationship of a variety of variables to work force participation for nurses, concluded that the level of nursing education was negatively related to hours worked and the probability of employment.

In contrast to studies concluding that higher education levels of nurses decrease work participation, Prescott and Bowen (1987) established that educational preparation for a group of nurses did not differ for "leavers" and "stayers". These findings were supported by a 1987 Louisiana nursing study--level of educational attainment had no significant effect on employment status or intent to stay (Prestholdt, Lane, & Mathews). Another study designed to develop a taxonomy of nursing work patterns found that nurses with the bachelor's degree were slightly more likely to work continuously or with only brief breaks in employment than nurses with less education (Nolan, 1985).

Price and Mueller (1981) devised an explanatory causal model of nursing turnover. Although they looked at institutional commitment instead of career persistence, one of the independent variables studied was "general training"; defined as the amount of schooling in nursing. They did not attempt to assess the influence of the educational process on persistence. Consistent with the above research scope, Prestholdt et al. (1987) used a similar definition of "education level" in their application of theory to nursing turnover. Their study revealed no significant correlation between educational level and turnover.

Intention.

The nursing literature refers to "goals", "intentions", or "aspirations" for future nursing roles. Simpson (1979) requested anticipated goals for twenty years into the future

for incoming freshman nursing students. The altruistic leaning of nursing students for perspective career aspirations was supported by their findings; 98 percent wished to serve their fellow man, 66 percent wished to contribute to nursing. The authors concluded that aspirations in nursing were directed toward helping rather than success in career--interdependence between intent and success was not investigated after graduation.

In contrast to the above study, the research of Prestholdt et al. (1987) supported intention as the only significant predictor of employment status for a sample of nurses. The authors measured intention in three ways: (a) "remaining on the staff of this hospital", (b) "resigning from this hospital", and (c) the difference between these scales as "differential intention" (p. 223). Although they did not look at career persistence per se, their findings revealed that differential intention predicted 32 percent of the variance for nurse turnover within the hospitals sampled.

The above study is based on a supposition of reasoned action--a derivative of Fishbein and Ajzen's (1975) theory of behavior. Fishbein and Ajzen's theory supposes that "the best single predictor of an individual's behavior will be a measure of his intention to perform that behavior" (p. 369). They identified three contingencies affecting the measurement of the connection of intention to overt behavior. To validate this relationship they suggested the

following actions: (a) intention and behavior should be expressed in similar and specific terms, (b) behavioral measurements should be proximal to the stated intention, and (c) the intended behavior should be self controlled (p. 369).

A meta-analysis of selected research articles using the variables of intention and employment turnover was accomplished by Steel and Ovalle (1984). Their findings substantiated Fishbein and Ajzen's (1975) and Prestholdt et al.'s (1987) studies between intention and employee turnover. Intention was more predictive of turnover than either "overall job satisfaction, satisfaction with work itself, or organizational commitment" (p. 673). Their review also supported the Fishbein and Ajzen position on the time interval between measurement of predictor data, intention, and turnover, for they state that "there appears to be a steady erosion of this relation as the time span lengthens" (p. 683).

Educational Integration

Studies on use of college education and socialization have shown that socialization is higher in professional occupations than in others (Brim & Wheeler, 1966; Tinto, 1980). The general opinion is that the effect of socialization and education's impact on employment occurs early in the career and decreases over time (Tinto, 1975). The longitudinal research project of Simpson (1979) investigated the relatedness of nursing education to

occupational commitment in one school of nursing. Their analysis revealed that commitment was consistently high for alumnae who expressed high commitment levels as students. They concluded that nursing education formed an orientation more suitable to the concept of occupation rather than that of career, because "nursing is organized in a way more accommodated to intermittent. . . .employment" (p. 151).

In their work on professional socialization, Olesen and Whittaker (1968) noted the lack of information about nurse professionals as they pursue careers. After seven years of data gathering and analyses in a school of nursing, they failed to follow their sample of students more than one year after graduation. Thus, they also lost potential knowledge of the longitudinal effects of the educational process.

The above multidimensional studies of nursing socialization were each limited to one university (Olesen & Whittaker, 1968; Simpson, 1979). In contrast, most research in multiple settings that have examined educational effects on nurses have only used quantitative measures, such as degree type and years of schooling, without examining the effect of the total college experience on career (Munro, 1979, 1983; Price & Mueller, 1981).

Addressing the above concern, Griffin and Alexander (1978) question the misleading of duo assumptions of the homogeneity of educational experiences for students and the lack of need for qualitative elaboration on the effect of the college experience itself. Their research, although

directed at a male, non-nurse sample, suggested that studies that include "qualitative variations in educational experiences" (p. 343) should be initiated in multiple settings to assess the effect of education on occupational attainment and status.

Job Satisfaction

Those phenomena that impede continuation of career path are intricate. The literature currently focussing on nursing ranges from studies on job satisfaction to essays on the problems encountered by nurses in the work setting; conclusive contributions have not surfaced.

In the 1960's Corwin and associates (Corwin, Taves, & Haas, 1961; Corwin & Taves, 1962) published the first research on nurse disillusionment. Concepts derived from these studies became the standards that formed the basis for current socialization research in nursing. The role of nurse was investigated from the perspective of conflict between bureaucratic and professional philosophies for groups of registered nurses (RNs) and students. The findings revealed differences between RNs with varying educational backgrounds and between practicing RNs and students on the variables of role conception, role certainty, and disillusionment. They concluded that role conception was the basis for commitment to an institution or career, while disillusionment is derived from both job dissatisfaction and the decline of the nursing image in modern society.

Corwin's work (1961, 1962) was confirmed and extended by Kramer (1974) and Schamalenberg and Kramer (1976) who proposed the term "reality shock", a state identified as leading to turnover or career departure. To minimize reality shock bicultural socialization by schools of nursing was suggested. This socialization was to take place before the student became a part of the nursing subculture and was proposed as an effective means of decreasing disillusionment with nursing.

Contrasting conclusions to the above studies were reported in a longitudinal study of turnover and job satisfaction where recent graduates and experienced nurses were separated into two groups of newly hired nurses (Weisman, Dear, Alexander, & Chase, 1981). The results revealed no significant difference between the groups of nurses on job satisfaction scales or turnover rates; both groups averaged a 33 percent resignation rate in one year. The authors concluded that anticipatory socialization by nursing schools may have limited value in increasing job satisfaction and that work environment has the strongest impact on turnover.

A study which continued the research on satisfaction isolated four relevant factors important in perceived prototypes of job satisfaction. These factors are (a) interpersonal relationships with co-workers, (b) intrinsic work rewards, (c) tangible work rewards, and (d) administrative policies (Everly & Falcione, 1976).

Similar relevant findings (except for the variable, interpersonal relationships with co-workers) were reported by Wandelt et al. from a sample of 3,500 nurses (1981).

Another study used Corwin's scale of role concept (1960), Everly and Falcione's scale of job satisfaction (1976), and an alienation scale to investigate a variety of relationships between the preceding concepts and demographic variables for newly hired nurses (Ahmadi, Speedling, & Kuhn-Weissman, 1987). The findings substantiated ealier studies of Corwin, Everly and Falcioni, and also those of Kramer's. Thus, increasing job dissatisfaction relates reciprocally to the factor of alienation.

Kinship Responsibility

Studies based on satisfaction are often in contrast to those that look at economic and personal issues. Greenleaf compared life-work patterns for nurses and other women in comparable occupations (1983). A small, nationally collected, post hoc, longitudinal sample was used that included 124 nurses, 157 elementary school teachers, and 96 individuals from other so-called "female" occupations. To investigate effects on labor force participation this study used the following independent variables: age, family income, degree, number of young children, and satisfaction. The unique results revealed that nurses with young children remain in the labor force in significantly larger numbers than non-nurses and nurses lose a significant number of

their work force after age 35. The conclusions were not explained by salary or other variables within the study.

Previous research in higher education settings has established a rather inconsistent relation between socio-economic status (SES) and persistence. Tinto (1975) found an inverse relation between SES and departure in his review of previous studies, Munro (1980) reported that SES was not a direct predictor of persistence in nursing major for nursing students, and Nora (1987) was unable to explain statistically the effect of SES on persistence. These studies used parental education, father's occupation, and family income to form indices of SES.

In contrast, other literature in career path persistence for RNs demonstrates common conclusions regarding the effects of SES. Studies reveal that the higher the family SES with the presence of young children in the home, the less likely the nurse is to remain in the job market (Ezrati, 1987; Greenleaf, 1983; Link & Settle, 1980; Minnick, 1987).

The above studies offer a limited scope of family responsibility, and this limitation comes from the following sources: (a) the preponderance of cross-sectional studies that use only the current SES, (b) the assumption that women seeking nursing as a occupation are from predominately middle income families, and (c) the preconception that wages earned by nurses are a "second income" (Link & Settle, 1980; Nolan, 1985).

A study with divergent economic findings was conducted by Nolan (1985) on nurse work patterns. Her study confirmed four work cycle groups for a small sample of women aged 46 to 59. Conclusions were that 54 percent of the nurses had been employed consistently or with few interruptions since graduation. Although the cohorts in each work cycle grouping expressed primary commitment to family roles, the majority had continued to work in nursing since graduation. Few of these nurses claimed a career orientation on their part and most had maintained lateral positions in jobs, often part-time, since graduation. Degree of family responsibility had no impact on work cycle group placement--all groups reported similar numbers of children and marital status.

Kinship responsibility of nurses, an index constructed from questions about marital status, number of children, and importance of motherhood role, was found to have a positive influence on intent to stay employed and an indirect effect on job turnover when studied by Price and Mueller (1981). They predicted that a higher level of kinship responsibility would increase intent to stay in the community where family commitment was high. Theoretically based on demographic migration literature, the authors concluded that this variable proved a valuable new addition to research on nurse departure.

Summary

In this chapter the literature and theoretical background for the variables of the current study were reviewed and have been shown by previous research to be related to the issue of persistence. The variables are directly derived from a theoretical model of the departure/persistence process grounded in higher education and being extended to career. The causal relationship between variables and the theoretical validity of the model will be substantiated by an analysis program called GEMINI (Wolfle & Ethington, 1985) which analyzes each specified structural equation in the model and calculates direct and indirect effects and their significance.

Chapter 3

METHODOLOGY

This chapter will describe the data set, limitations, the causal model, and procedures for data analyses.

The Data Set

Sample

The sample for this study was obtained from the National Longitudinal Study-1972 (NLS-72). The NLS-72 project is overseen by the Center for Education Statistics (CES). CES is mandated to "collect and disseminate statistics and other data related to education in the United States" and to "conduct and publish reports on specialized analyses of the meaning and significance of such statistics" (Riccobono, Henderson, Burkeimer, Place, & Levinsohn, 1981b, ii).

The 270 subjects used for this study completed nursing degrees before the Fourth Follow-Up Survey. The completion of nursing programs and the type of degree received was verified through analysis of the Post Education Transcript Study of the NLS-72 (PETS) (Jones, Baker, & Borchers, 1986). Further information regarding the demographic information on the sample can be found in Chapter 4.

The NLS-72 is designed to study longitudinally a nationally collected, stratified two-stage selection of approximately 19,000 high school seniors. "A stratum is a

subpopulation" (Wilson, 1985, p. 217) from which participants are drawn that are relevant to the study. This method is based on the idea that the proportion taken for the sample is equivalent to a like proportion of the total population (Wilson). Initially, the sampling design developed 600 strata obtained from files from the Office of Education and the National Catholic Education Association. The selection of these linear groups was based on the following (Riccobono et at., 1981a, p. 7.):

-Type of control (public or nonpublic)

-Geographic region (Northeast, North Central, South, and West)

-Grade 12 enrollment

-Proximity to institutions of higher learning (3 distance categories)

-Percent minority group enrollment (8 categories, public schools only)

-Income level of the community (11 categories, public school; 8 categories, Catholic schools)

-Degree of urbanization

All strata, except the smallest ones, had schools selected "with equal probabilities". The remaining strata schools were selected with "probabilities proportional" to the number of senior students (Riccobono et al., 1981a, p. 7). To increase numbers of "disadvantaged" students, schools "in low-income areas" and "with a high proportion of minority group enrollment" were sampled "at twice the rate

used" for other schools (Riccobono et al., 1981a p. 8). Although four schools were initially selected from each stratum, two additional schools were randomly assigned to the project. The remaining schools were held as substitutes, to be used when needed.

The next stage of student sampling began in the spring of 1972. This step in the procedure was a random drawing of eighteen students per school. Exceptions were made in small schools, where all seniors were selected. In addition, five reserve students were sampled in case of participant mortality. "In both cases, the students within a school were sampled with equal probabilities and without replacement" (Riccobono et al., 1981a p. 8).

In 1973, the first follow-up survey added nearly 4,500 additional students who were unable to participate in the initial sampling. Four additional surveys followed, which used the combined techniques of mail, telephone, and personal follow-up in the years 1974, 1976, 1979, and 1986 (Jones et al., 1986; Riccobono et al., 1981a).

During 1984-1985 the Postsecondary Education Transcript Study (PETS) was conducted. This project collected and processed transcripts for NLS-72 participants who had attended any postsecondary institution. "Information from the transcripts, including terms of attendance, fields of study, specific courses taken, and grades and credits earned, were coded and processed into a system of data files

designed to be merged with the NLS-72 questionnaire data files" (Jones et al., 1986, p. 1).

Design of NLS-72

The stratified two-stage probability sample design of NLS-72 allows for a longitudinal analysis of information as "the history of the age cohort can be taken into account and modeled, analyses can be designed that isolate school and program effects from the effects of differential life experiences" (Jones et al., 1986, p. 2). Two-stage probability sampling uses randomization in one or more of its stages, while stratified sampling implies that the population is divided into populations of like individuals from which a random sample has been drawn (Kerlinger, 1986).

Base Year Survey

The Educational Testing Service (ETS) conducted a stratified national sample of 1,200 schools in the Spring 1972. The stratified sampling techniques "called for a probability sample of 1,200 schools with 18 seniors per school, school size permitting" (Riccobono et al., 1981a, p. 2). From these schools, three information sets (a Test Battery, a School Record Information Form, and a Student Questionnaire) were completed by 16,683 senior students.

The First Follow-Up Survey

Conducted from October 1973 to April 1974 by the Center for Educational Research and Evaluation (CERE), the First Follow-up Survey added 4,450 seniors from schools that were not included in the base year sample. The survey was mailed

to 22,654 students; results were received from 21,350 by mail, personal, or telephone contact. Information as to current status, as well as retrospective information on selected base year variables, was requested from participants new to the program. The retention rate was 93.7 percent of base year participants (Jones et al., 1986).

The Second Follow-Up Survey

Questionnaires were mailed to 22,364 participants from October 1974 to April 1975 by CERE. New information gathered was concentrated in the areas of work and education. Thus members entering the survey at this point received retrospective requests for information--information that would add continuity to the data base. Responses were returned from 20,872 participants, a 94.6 percent retention rate for first year participants (Jones et al., 1986).

The Third Follow-Up Survey

Conducted from October 1976 to May 1977 by CERE, the Third Follow-Up included 20,092 responses. Concurrent and retrospective information from 93.9 percent of the Second Follow-Up participants was obtained (Jones et al., 1986).

The Fourth Follow-Up Survey

This survey was conducted from October 1979 to May 1980 by CERE and resulted in the return of 18,630 questionnaires. Requests to participants who had failed to respond to critical work and educational history questions numbered 5,548 and a selected subgroup of these, numbering some 2,648, were retested on base year test batteries. Much of

this follow-up was concerned with retrospective data for 1979, 1978, and 1977, with concurrent information obtained regarding family formation and political participation. At this time, the study included 78 percent of the base year respondents and 73 percent of the participants who had completed key questions at each and all time points that had been collected in the steps of the study (Jones et al., 1986).

The Fifth Follow-Up Survey

This follow-up took place in the spring and summer of 1986. Of the original sample of 22,652, a mail questionnaire was sent to a "subsample" of 14,489 members. Although these participants were now 32 years of age and had completed 14 years in the survey, there was a return of 12,841 (89 percent) (Tourangeau et al., 1987). Among the groups in the subsample, some were over-sampled and some were under-sampled. Within the over-sampled groups were those "persons with a four-year or five-year college degree" and in the under-sampled groups were "those with two years of college or less" (Tourangeau et at., 1987, p. 9). Conducted not by the CERE, but by the National Opinion Research Center (NORC), the project was expanded by monetary inputs from four other special interest groups which wished to help continue the work of the CES and its longitudinal studies project (Tourangeau et al., 1987).

The Postsecondary Education Transcript Study (PETS)

In the first through fourth follow-up survey, 14,700 participants had reported attendance in post-secondary institutions. In July 1984, NORC requested 24,400 transcripts and catalogs from some 4,000 schools. Multiple transcripts and information were requested from those students who had reported attendance at more than one institution (Jones et al., 1986).

PETS was used to validate the accuracy of the reporting of certain items in NLS-72. This accuracy check became necessary because "the kinds and quantity of information collected on course-taking patterns and on grades, credits, and credentials earned has been limited necessarily by the survey methodology and respondents' ability to recall the details of their educational experiences" (Jones et al., 1986, p. 5). The return rate from all categories of secondary education institutions was an average of 73 percent. The postulated reasons varied for the fact that some transcripts for students attending these institutions were missing, but ten percent of the missing records may have been from participants who misrepresented college attendance (Jones et al., 1986). Note, however, that transcript returns for categories of students likely to be enrolled in nursing programs was 91 percent (private non-vocational and public two-and four-year institutions).

Limitations of the Study

To assure adequacy of this research, certain limitations of the study were identified and addressed. These anticipated limitations included non-experimental research methods, reliability and validity of measures, and risks associated with secondary data sets.

Kerlinger (1986, p. 358) states that non-experimental research has several major weaknesses: "(a) the inability to manipulate independent variables, (b) the lack of power to randomize, and (c) the risk of improper interpretation". In fact, a failure to control is a major problem of post-hoc methods and can lead to difficulties of interpretation.

Addressing the pitfalls of using secondary data, Jacob (1984) emphasized that measurement error is one problem that can cause significant inaccuracy in data. This problem surfaces when concepts are operationalized during the primary data collection that are contrary to the meaning of the secondary study. Jacob suggests that the use of concrete indicators by the primary data collectors, rather than abstract concepts, can decrease this problem. Another partial solution to this problem is the use of multiple indicators from the collected data by the secondary user.

Jacob (1984) also discussed another major problem encountered with the use of the NLS-72 in this study; alteration of and deletion of items from one wave to another. When the initial data is altered in longitudinal studies it is often difficult to know if changes in

individual responses are due to attitude changes, perceptual changes, or poor data collection.

Even though it has been noted that lack of control is inherent in non-experimental research, this study used a post-hoc survey to gain the information which was necessary to study a suitable sample of individuals over a period of time. The NLS-72 discussed above, provides the best available longitudinal information on a group of high school and college graduates who enter into nursing and make career decisions concerning that vocation. Some variables that should have been reevaluated over time were deleted from the current study and others have changed in content. When items have been changed or deleted this is acknowledged in the definition of the variables for the causal model found in Chapter 1.

According to Cooley, methods can be used to strengthen non-experimental design and "yield consistent, convincing, useful explanations of educational phenomena" (1979, p. xvi). Methods used in this study were: (a) a sampling framework, the stratified two-stage probability sample, which will allow some degree of generalization to nurses in this general time period; (b) a theoretical model, which described the theorized causal relationships of the variables; (c) multiple measures when feasible; (d) establishment of construct validity and reliability of measures used in this study; and (e) a multivariate

statistical procedure, which was used to analyze the proposed causal relationships between variables.

The value placed on construct validity applies to all aspects of research where the possibility of confusion of abstract terms through their careless definition may exist. Therefore, construct validity is "best achieved. . . by the careful preexperimental explication of constructs so that the definitions are clear and in conformity with public understanding of the words being used" (Cook & Campbell, 1979, p. 60).

Constructs used in this study are clearly defined and conform to common usage. Multiple items for construct measurement are used when possible within the limitations of the data set. Factor analysis, discussed later in this chapter, was used to measure the level of construct validity for those appropriate constructs. Kerlinger states that "factor analysis is a powerful and indispensable method of construct validation" (1986, p. 427).

Mortality can affect the composition of the final group of individuals in a given study and results from attrition of cohort members (for whatever reason). This threat to the validity of this study was diminished by both the high return rate for questionnaires in each wave of the NLS-72 and the over-sampling of college graduates in the Fifth Follow-Up (Tourangeau et al., 1987). Note, however, that the nursing sample had a mortality rate of 25.6 percent from 1979 to 1986, but that the overall sample mortality was

43.32 percent in that same time period. To compensate for the possible loss of cohort members in the NLS-72 Fifth Follow-Up, due to the selective sampling of this wave, a statistical weighting procedure was developed by NORC to counteract this threat by producing equal probabilities of retention and adjusting for non-response (Tourangeau et al., 1987). Although this weighting procedure was used, the loss of 25.6 percent of the sample certainly may have impacted on the results of the study.

Instrumentation

For the purposes of this study, items deemed content valid were selected from the NLS-72 data set to form the operational definitions and for use in the measurement of the variables. Content validity for each variable was confirmed by a panel of experts. These six experts wre selected from the fields of Anthropology, Education, Nursng, and Pharmacy. When possible, multiple items were used. A variety of methods were used to form the scales for the items, however most scales are additive (Dawes, 1972; Edwards, 1957; Fishbein & Ajzen, 1975; Kerlinger, 1986). These scales are discussed in Chapter 1 and in Appendices B through L.

In addition to content validity, each group of items received either additional analyses for validity and reliability or reliability alone. These procedures included factor analysis for construct validity and Cronbach's alpha

for reliability. These procedures are discussed in the following sections.

Construct Validity

In order to increase the accuracy of the measurement of constructs or factors after theory information, factor analysis can be useful. Factor analysis, according to Jorkeskog and Sorbom, "is one of the only statistical procedures that involves the relationship between observed variables (measurements) and the underlying latent factors" (1979, p. 3). There are two major uses for factor analysis, exploratory and confirmatory. Exploratory factor analysis defines the factors underlying a set of items or measures. Confirmatory factor analysis tests proposals about factor structures of sets of data (Kerlinger, 1986). For the purposes of this study exploratory factor analysis was used. It was predetermined that each component would have a factor loading of .40 or above to be retained as a construct within the model (Armor, 1974; Munro, 1979). Factor loading refers to a coefficient derived from the correlation between factors and variables; the closer to 1, the higher the factor loading or correlation (Kim & Mueller, 1978).

Factor analyses were completed on the following constructs: (a) academic integration-1, (b) academic integration-2, (c) job satisfaction-1, (d) job satisfaction-2. All of these constructs were represented by multiple items. Items that were shown to characterize a single factor, as a result of factor analysis, were retained

for this study and a scale including these items was constructed from the item analysis. Table 2 shows the results of the factor analysis.

Cronbach's Alpha

In addition to concerns about construct validity, measures of internal consistency (reliability) were completed on all constructs which had multiple measures. Internal consistency is a measure of homogeneity and accuracy of test items. Cronbach's alpha represents the correlation of selected test items with alternate test items from the same test or index. The average intercorrelation of the subtests reveals the internal consistency of the index or test (Kerlinger, 1986, p. 413). The reliability index ranges from 0.00 to 1.00; variables with an index of less than 0.40 were considered of doubtful reliability (Armor, 1974). The following reliabilities were obtained: academic integration-1, 0.97; academic integration-2, 0.79; intentions, 0.83; job satisfaction-1, 0.99; job satisfaction-2, 0.87; kinship responsibility-1, 0.69; and kinship responsibility-2, 0.15. Kinship responsibility-2 was retained even with this doubtful reliability--the theoretical value of this variable and the items used were deemed essential to the model.

The Model

In this study, a causal model was used to examine career attrition, over time, for a sample of nurses. The purpose of a causal model is to provide a parsimonious explanation

Table 2

Results of Factor Analysis for Selected Variables

Variable	Items	Factor Loading
Academic Integration-1		
	How did your schooling relate to your experiences on this job?	
	I was able to apply most of what I learned in school.	.9641
	I would of liked more job related training	.9628
	I did not use, on the job, tools or equipment I was trained to use.	.9591
	I realized I had taken course work associated with my training which was not helpful in performing my job	.9580
	The way the job was done was different from the way that I was trained.	.9579
	I considered going to school and getting the training a wise choice.	.9555
	I could have gotten my job without the training.	.9501
	I considered myself to be doing as well as others with similar training	.9457
	Most of what I did on the job I learned in school.	.9451
	Which of the following statements describes your experience during your last year of school?	
	I learned a great deal from the education or training.	.9587
	I found the course work interesting.	.9386

Table 2 (continued)

Results of Factor Analysis for Selected Variables

Variable	Items	Factor Loading
Academic Integration-1		
	With regards to your education and training during the last year you were in school, how satisfied as a whole were you with the following?	
	The quality of instruction	.9553
	The prestige of the school	.9552
	The ability, knowledge, and personal qualities of most teachers	.9465
	Development of my work skills.	.9460
	Course curriculum.	.9459
	My intellectual growth	.9370
	If you had it to do over again, which of the following do you think you would do?	
	Get more education	.3703#
	Take a different course of study in school	.1665#
	Take more technical courses and fewer academic ones.	.1022#
	Take more academic courses and fewer technical courses.	.0997#
	Get less education	-.0446#

Note. All items marked with # were deleted from the variable measurement.

Table 2 (continued)

Results of Factor Analysis for Selected Variables

Variable	Items	Factor Loading
Academic Integration-2		
	With regard to your education and training during the last year you were in postsecondary schooling, how satisfied as a whole were you with the following?	
	The quality of instruction	.8140
	Course curriculum.	.7338
	My intellectual growth	.6807
	Development of my work skills.	.6148
	The prestige of the school	.4258
	Which of the following statements describes your experience during your last year in postsecondary schooling?	
	I learned a great deal from the education or training.	.5826
	I found the course work interesting.	.5293
Job Satisfaction-1		
	How satisfied were you with the following aspects of this job?	
	Pay.	.9955
	Fringe benefits.	.9954
	Importance and challenge	.9898
	Working conditions	.9859
	Opportunity for promotion and advancement with this employer	.9786
	Opportunity for promotion and advancement in this line of work.	.9767
	Opportunity to use past training and education.	.9670

Table 2 (continued)

Results of Factor Analysis for Selected Variables

Variable	Items	Factor Loading
Job Satisfaction-1		
	Security and permanence.	.9605
	Supervisors.	.9570
	Opportunity for developing new skills.	.9568
	Job as a whole	.9499
	The pride and respect I received from my family and friends by being in this line of work. . .	.9448
Job Satisfaction-2		
	How satisfied were you with the following aspects of your present or most recent job?	
	Pay and fringe benefits.	.9955
	Importance and challenge	.9862
	Working conditions	.9812
	Opportunity for advancement and promotion with this employer.	.9787
	Opportunity to use past training and education.	.9631
	Security and permanence.	.9537
	Supervisor(s).	.9516
	Opportunity for developing new skills.	.9489
	The pride and respect that I receive from my family and friends by being in this line of work.	.9467
	Job as a whole	.9435

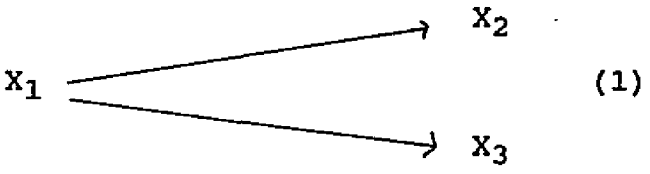
The above non-copyrighted items were adopted from Riccobono et al. (1981a) and Tourangeau et al. (1987).

of the phenomena involved (Everitt, 1984, p. 4). The model for this study specified that certain exogenous variables that lie outside the model (goal commitment-1 and kinship responsibility-1 and -2), may influence endogenous variables that lie within the model (academic achievement, academic attainment, intention, goal commitment-2, academic integration-1 and -2, and job satisfaction-1 and -2), which in turn may influence each other and career decisions about persistence sampled at two time periods (1979, 1986).

Causal modeling techniques have value as both exploratory and analytic devices to further theory development (Alwin, 1974; Asher, 1983; Duncan, 1966, 1969; Heise, 1969; Land, 1969; Tinto, 1980; Wolfle, 1985). In fact, this particular technique requires a firm theoretical and substantive base before model development. Thus, Asher (1983) cautions the researcher to be aware of basic research processes that can contribute to failure above and beyond the analysis stage: "poor theory, unsatisfactory operational definitions, and the like" which cause more problems than the "application of techniques" (p. 10). The models are designated in two ways: recursive (only one directional paths exist between variables), and nonrecursive, reciprocal, or simultaneous (a bi-directional path exists between variables). This designation must be decided upon before the analysis stage. Thus, causal models become an "<u>explicit</u> and <u>quantitative</u> statement of the postulated causal links between variables of interest"

(Rogosa, 1979, p. 266). The model specified for this study is recursive.

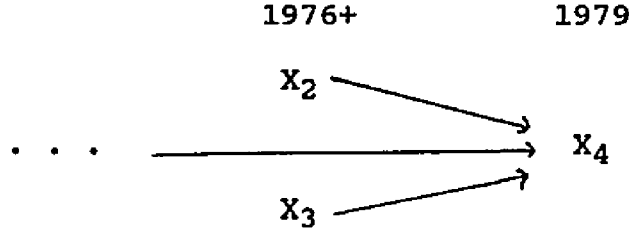
The initial process of the model development is the designation of the causal structures within the model. For the illustrative purposes of the model development and ordering of variables, indirect effects are not shown. The full model is shown in Figure 3 with direct and indirect effects demonstrated. The first component forms the relationship between goal commitment-1 (X_1), level of attainment, and success in college (Hafner & Owings, 1988; Tinto, 1975). Thus,



(1)

where X_2 represents academic achievement and X_3 represents academic attainment.

The next relationship is hypothesized from the socialization literature, where it appears that the ability to integrate nursing education into occupational skills is derived from level of achievement and level of attainment in the educational program (Price and Mueller, 1981; Simpson, 1979). Therefore,

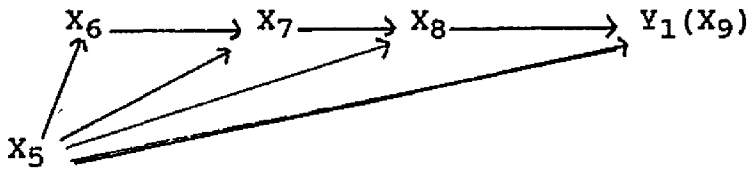


(2)

where X_4 represents degree of academic integration.

The next grouping of variables in the model includes the insertion of kinship responsibility as an exogenous variable and hypothesizes its impact on job satisfaction, intention, commitment, and persistence. Kinship responsibility has appeared in the literature as an independent variable without predictors and was treated here in the same way (Price and Mueller, 1981). The ability to insert exogenous variables into the model, within appropriate time sequences, appears to substantiate the value of longitudinal studies over cross-sectional studies. This sequence becomes,

1979



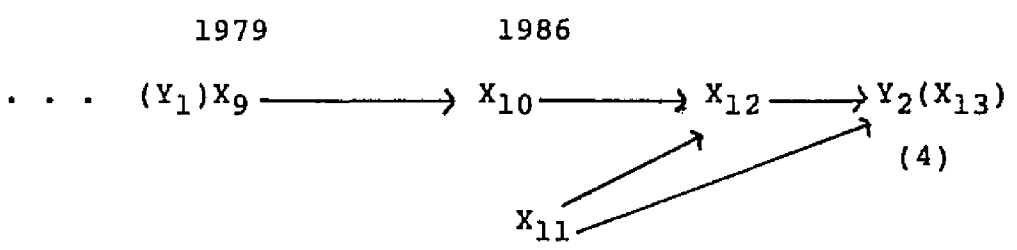
(3)

where X_5 represents kinship responsibility-1, X_6 represents job satisfaction-1, X_7 represents intention, X_8 represents goal commitment-2, and Y_1 (X_9) represents persistence.

The ordering of the variables in this sequence (3) are dictated by previous research which found that job satisfaction precedes intention in a precise causal ordering (Mobley, 1977; Price & Mueller, 1981). It should also be noted that there are conflicting views in the literature suggesting that intent may be a sub-component of commitment and share reciprocal effects, or that they may be separate entities (Tinto, 1975, 1987; Price & Mueller, 1981).

At this point, the dependent variable, persistence-1 becomes an independent variable for the next time sequence. Price and Mueller found, not surprisingly, that nurses with

the longest tenure have the highest intent to persist (1981, p. 556). Thus this sequence of causal ordering becomes,



where X_{10} represents academic integration-2, X_{11} represents kinship responsibility-2, X_{12} represents job satisfaction-2 and Y_2 (X_{13}) represents persistence-2.

The full causal model used in the study is shown in Chapter 1 as Figure 3. This figure is an illustrative description of the multidimensional, longitudinal aspects of this study. The model is organized in the time sequences that were used to evaluate the direct and indirect longitudinal effects of the variables. Structural equations from the model, following Wright's rules (Asher, 1983), are shown in Appendix A.

Analysis of the Model

Causal modeling has traditionally been accomplished by path analysis. Kerlinger (1986) describes this method as a means of calculating direct and indirect effects of independent variables on a dependent variable. It is used primarily in recursive, cross-sectional models that are used to study longitudinal patterns of alteration (Wolfle, 1985). The accepted substitution of cross-sectional information for longitudinal information is disputed by Rogosa (1979), who also faults the assumption that the doubtful balance and stability of cross-sectional samples can be used in place of

the more complex and stable longitudinal collections. Rogosa contends that with multiple regression techniques, path coefficients have been obtained in longitudinal surveys which are superior to and more representative than those obtained in cross-sectional studies.

In a review of several methods of path analysis, Asher (1983) selects Wright's method. This reduced form for structural equations allows for the expression of exogenous variables only. The use of Wright's rules leads to the following: "any correlation between two variables can be decomposed into a sum of simple and compound paths" and "a compound path is equal to the product of the simple paths comprising it" (Asher, p. 33). Land addressed Wright's concepts of path analysis when he referred to the "restrictions" of the method. Causal modeling shares the common assumptions of multiple regression equations, which will be discussed later. When the rules developed by Wright are followed by researchers, they are applying Wright's standards (Land, 1969, pp. 6-7). For example: (a) that theorized causal relationships are demonstrated by one-way arrows, (b) that theorized non-causal relationships between variables that lie outside the model (exogenous) are expressed as curvilinear, bi-directional arrows, (c) that residual variables are symbolized as one-way arrows, which point toward the dependent variable affected by the error, and (d) "quantities entered beside the arrows on a path diagram are the symbolic or numerical values of the path and correlational coefficients of the postulated causal and

correlational relationships. . . . p_{ij}, $_i$ denotes the dependent variable, and $_j$ denotes the variable whose influence is under consideration" (Land, p. 6) and represents the standardized coefficient. The format for this study will follow Wright's rules, however unstandardized (metric) coefficients will be used as suggested by Wolfle (1985).

Path analysis, in essence, uses regression analysis techniques, shares many similarities and assumptive requirements, and uses ordinary least squares (OLS) regression in recursive models (Asher, 1983). The basic multiple regression model is:

$$Y = b_o + b_1 X_1 + b_2 X_2 + \ldots + b_k X_k + e$$

where the b_i's are unknown unstandardized (metric) parameters that are weights for each independent variable in prediction of Y, and e is an error term that arises from two sources (Asher, 1983, p. 25):

1. a stochastic error component resulting from effects on Y of any omitted variables operating randomly, with small effects.
2. a measurement error component.

In addition, the OLS technique requires that certain assumptions be met. Simply stated, these assumptions are that (Mueller, 1988, p. 8):

1. the independent variables are measured without error.
2. the regression of the dependent variable on the independent variable is linear.

3. the error term is independent, identically and normally distributed, with a mean of zero and a constant variance.
4. the independent variables are not highly correlated with each other.

However, there is evidence that regression analysis is robust even when these assumptions are somewhat violated, if multiple violations or major violations do not occur (Asher, 1983; Kerlinger, 1986).

According to Wolfle, the subtleties of regression analysis are specific "statements of theoretical relationships in path analysis" (1980, p. 184). Beyond this, he states that the added strength of path analysis is the interpretation of computational results and not just the computations themselves. Some of the variety of interpretive possibilities follows.

Causal models permit the analysis of direct causal links (direct effects) through the estimation of partial regression coefficients obtained with ordinary least squares regression techniques (Wolfle, 1980, 1985). Further use of these direct effects allows the calculation of indirect causal effects--estimates of the extent to which intervening variables account for determined relationships between variables.

In addition, paths (partial regression coefficients) are signed as positive, negative, or zero. A positive relationship shows increases in X and Y, while a negative relationship demonstrates an inverse relationship between X

and Y. Zero relationships and those relationships deemed non-contributory by the researcher are usually not shown in the final model.

Another common use of path analysis, versus its more limited use in regression analysis, is the ability to judge the magnitude of impact. The magnitude of impact is determined by the quantity of increase of the dependent variable per unit increase in the independent variable (Davis, 1985). For example, if a dollar of income raises one's score on job satisfaction by .017 points then an $800 increase in income will raise the job satisfaction score by 5.6 points ($800 x .017 = 5.600).

The analysis of direct and indirect effects has been described in the path analysis literature since the 1960's (Duncan, 1966). Although some confusion between indirect and non-causal effects existed in early studies, these misconceptions were corrected in later works (Duncan, 1982; Wolfle, 1980; Sobel, 1982). Other researchers did not confuse indirect effects with non-causal effects, but choose to ignore their significance by classifying them as "population parameters" within the model (Wolfle & Ethington, 1985). In a 1982 paper, Sobel illustrated a method for calculation of "asymptotic confidence intervals" for indirect effects, which he considered superior and more general than earlier methods. In response to Sobel's work and in an effort to simplify the tedious non-computer calculations of Sobel, a FORTRAN computer program, SEINE, was developed for the calculation of standard errors of

indirect effects in recursive causal models by Wolfle and Ethington (1984).

Following the development of SEINE, Wolfle and Ethington continued to study the utilization of indirect effects in causal modeling. In 1985 an improved FORTRAN 77 program--GEMINI--was released by Wolfle and Ethington that analyzes only recursive causal models and calculates standard errors for both direct and indirect effects. Using a multiple regression routine suitable for 15 or less variables, the program estimates direct and indirect effects and their significance. In this study GEMINI was used for the calculation of indirect and direct effects, standard errors of these effects, and overall significance of individual and total effects within this model.

Summary

This chapter has described how the sample for the NLS-72 was obtained, the design of the data set, the limitations of the study, the causal model that was used for study, and the procedures for instrument construction and data analysis. The next chapter will discuss the results of the analysis of data.

Chapter 4

RESULTS

In this chapter the results of the analyses of the data and individual labor force participation are reported. The original and a reduced model are presented for the career persistence model and the direct and indirect effects of variables are reported for the full model.

Sample

The 270 registered nurses (RNs) that made up the sample for the current study were taken from the National Longitudinal Study-1972 (NLS-72). These nurses completed programs during the collection of data between 1972 and 1979; this program completion was verified by review of the Postsecondary Educational Transcript Study (PETS). The degree codes in the PETS manual (Jones, Baker, & Borchers, 1985) listed nursing graduates as having completed first, second, and third degrees; only first obtained degree status was used for this study. The manual also listed categories of schooling; degrees selected for this study were associate (AD), certificate or diploma (Dip), and baccalaureate (BS). These graduates were studied as a total group because of the small samples that would have resulted from categorization by degree.

The 270 RNs who were used for this sample group largely selected baccalaureate degree programs and were white females (see Table 3). By the Fifth-Follow-Up of the NLS-72, the number of nurses participating in the survey numbered 201--69 became missing cases. A review of reported marital status of nurses in 1979 and 1986 reveals that over two times the number of single nurses were reported in 1979 as in 1986. The significant number of missing cases for the 1986 sample complicate the interpretation of this data; therefore only frequencies are given. This information can be found in Table 4.

Results of Causal Model Analysis

The zero order correlation matrix, means, and standard deviations used to generate the GEMINI results (Wolfle & Ethington, 1985) are found in Table 5. These statistics formed the basis for the calculations of and testing for significance of the direct and indirect effects of variables theorized in the causal model. A review of the correlation matrix revealed that there were low to modorate correlations between all variables, which freed the analyses from threats of multicollinearity and allowed retention of all variables for testing.

Causal model analysis using GEMINI (Wolfle & Ethington, 1985) generates direct causal effects expressed as regression coefficients and obtained through ordinary least squares regression techniques. The sum of products of direct causal effects through intervening variables is the

Table 3

Demographic Characteristics of Nurse Participants

	n	%	n	%
SEX	1979		1986	
MALE	14	5.18	11	5.07
FEMALE	256	94.82	206	94.93
MISSING	--		53	
Total	270		270	

DEGREE-1976	n	%
AD	107	39.63
Dip	37	13.70
BS	126	46.67
Total	270	100.00

Ethnicity-1986	n	%
Hispanic	7	2.6
Native American	2	.7
Asian-Pacific Islander	1	.4
Black	15	5.6
White	174	64.4
missing	71	25.6
Total	270	100.00

Table 4

Marital Status and Number of Children of Nurse Participants

	1979	1986
	n	n
Single	84	39
Divorced, Widowed, Separated	32	18
Married	154	144
Total	270	201 (Missing-69)

# of Children	Frequencies	
0	155	75
1	55	39
2	27	59
3	7	25
4	1	1
5	0	2
missing	25	69
Total Number	90	126

Table 5

Correlational Matrix for Variables in the Career Persistence Model

Variables	X_1	X_2	X_3	X_4	X_5	X_6	X_7	X_8	X_9	X_{10}	X_{11}	X_{12}	X_{13}
X_1-GOCOM-1		.14	.24	.06	.01	-.18	.07	-.02	.10	.07	-.03	-.10	.09
X_2-ACHIEVE			.23	.25	.01	.05	-.07	-.03	-.03	.05	-.05	.01	.08
X_3-ATTAIN				.18	-.22	.05	.15	-.12	.01	.06	-.13	.16	-.04
X_4-ACINT-1					.08	.14	.01	-.05	.01	.24	-.06	.15	.07
X_5-KINRES-1						-.00	-.20	-.04	-.13	-.01	.52	.02	-.05
X_6-JOBSAT-1							-.14	-.05	-.04	.19	-.02	.21	.01
X_7-INTENT								-.06	.05	.02	-.10	-.04	.06
X_8-GOCOM-2									.01	-.05	.02	-.10	.11
X_9-PERS-1										.03	-.06	.13	.16
X_{10}-ACINT-2											.06	.22	.01
X_{11}-KINRES-2												.11	-.10
X_{12}-JOBSAT-2													.04
X_{13}-PERS-2													
Means	0.85	0.86	2.09	3.72	2.39	3.74	3.33	0.81	1.93	4.12	5.18	4.84	1.80
SD	0.35	0.71	0.91	0.92	1.71	0.75	0.56	0.39	0.59	0.89	2.06	0.79	0.68

Note: The above abbreviations stand for: GOCOM=Goal commitment; ATTAIN=Educational attainment; ACHIEVE=Educational achievement; ACINT=Academic integration; KINRES=Kinship responsibility; JOBSAT=Job satisfaction; PERS=Persistence. The numbers 1 and 2 following the abbreviations signify the sampling times. Critical value: $p < .05$ is 0.1193.

method for calculation of indirect causal effects. Wolfle states, "These decompositions provide a basis for substantively interpreting the causal effects that variables have on each other in a causal model" (1985, p. 386). Although GEMINI calculates these coefficients in both standardized and unstandardized (metric) form, Wolfle prefers the use of unstandardized coefficients as they are more substantive in their representation of the "scientific relationship contained in the theory being tested" (1985, p. 381). Unstandardized coefficients (metric) are used in this study. A more complete discussion of GEMINI can be found in Chapter 3.

The career persistence model, which is based on Tinto's model (1987), is the causal framework used to specify the relationships and causal order between variables. The model is depicted in Figure 4. The subscripts found on the paths (arrows) are equations derived from Wright's rules (Asher, 1983) as discussed in Chapter 3; each equation (hypothesis) is shown in Appendix A.

Discussion of the Analysis

The structural analyses will be discussed in relation to the significant direct and indirect effects of relevant variables on each endogenous variable. Direct and indirect effects and their level of significance are demonstrated in Table 6. Figure 5 is a reduced model showing only those direct and indirect paths that were significant at the

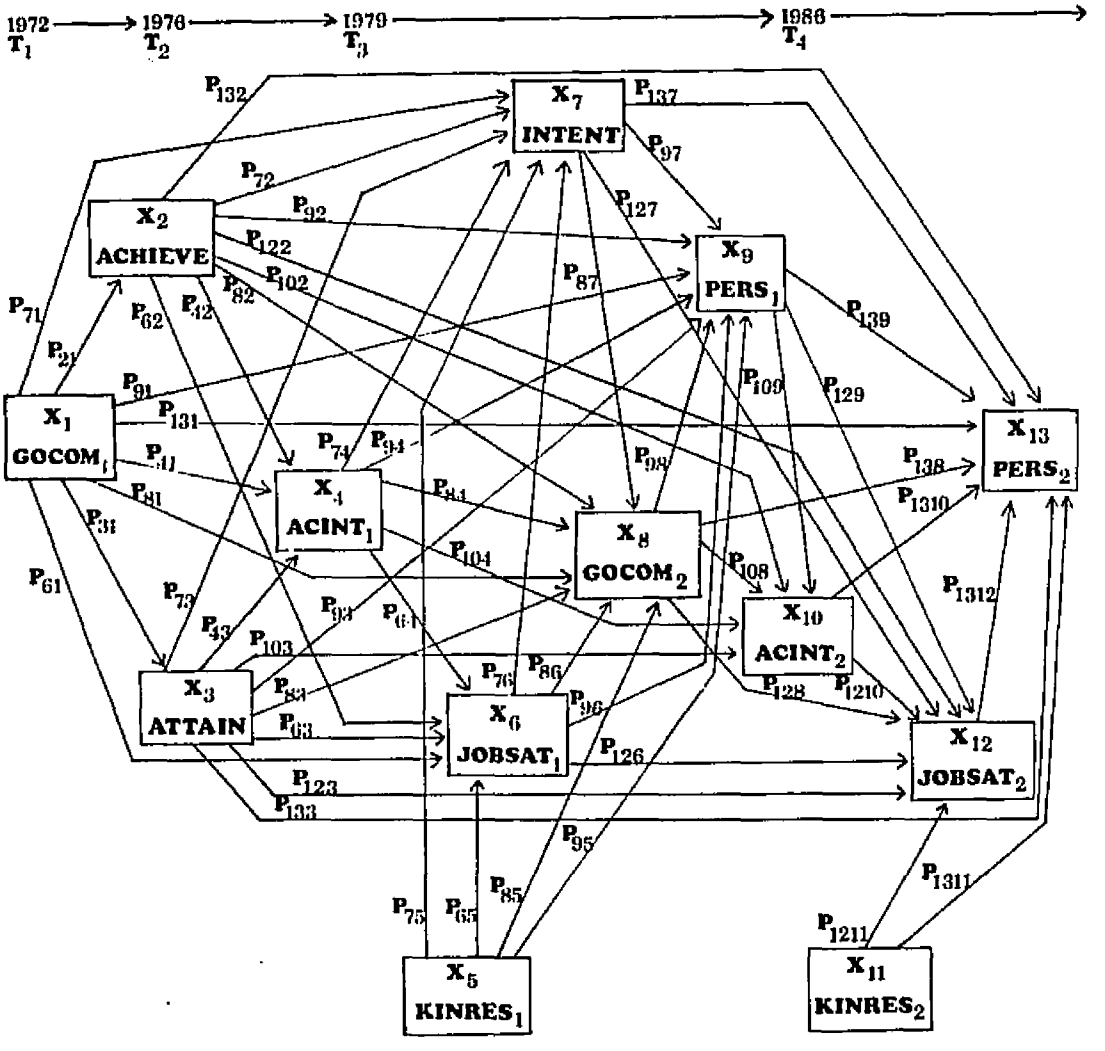


Figure 4. Career persistence model with paths.

Table 6

Structural Equations Showing Direct and Indirect Effects for the Career Persistence Model

Variables	Endogenous Variables									
N-270	X13	X12	X10	X9	X8	X7	X6	X4	X3	X2
X13 PERS-2										
X12 JOBSAT-2	.064 X									
X11 KINRES-2	.035 .003	.049* X								
X10 ACINT-2	-.008 .010	.149** X								
X9 PERS-1	.151* .012	.187* .005	.036 X							
X8 GOCOM-2	.190 -.009	-.137 -.013	-.082 -.000	-.002 X						
X7 INTENT	.080 -.011	-.057 .009	X .004	.010 .000	-.048 X					
X6 JOBSAT-1	X -.003	.175** .006	X .001	-.011 -.001	-.024 .005	-.108* X				
X5 KINRES-1	X -.015	X -.003	X -.001	-.049* -.001	-.018 .003	-.059** -.000	.005 X			
X4 ACINT-1	X .004	X .058***	.234*** .002	.019 -.002	.008 -.003	.025 -.011*	.105* X			
X3 ATTAIN	-.082 .000	.141** .017	.017 .034	-.030 .003	.052 -.006	.078* -.005	.060 .034*	.129* X		
X2 ACHIEVE	.097 -.013	-.040 .040	-.020 .067**	-.037 .004	.003 -.000	-.080 -.000	.036 .031**	.294*** X		
X1 GOCOM-1	.179 .010	X .044	X .048	.193 -.021	.008 -.029	-.038 .071	-.449*** .063	.010 .162**	.620*** X	.278* X
R^2	.07	.14	.06	.03	.02	.09	.06	.08	.06	.02

Note: * Coefficient significantly different from zero at p <0.05
** Coefficient significantly different from zero at p <0.01
*** Coefficient significantly different from zero at p <0.001

The top number is the unstandardized (Metric) direct effect; the bottom number is the unstandardized (Metric) indirect effect. "X" signifies no hypothesized regression coefficient for this path.

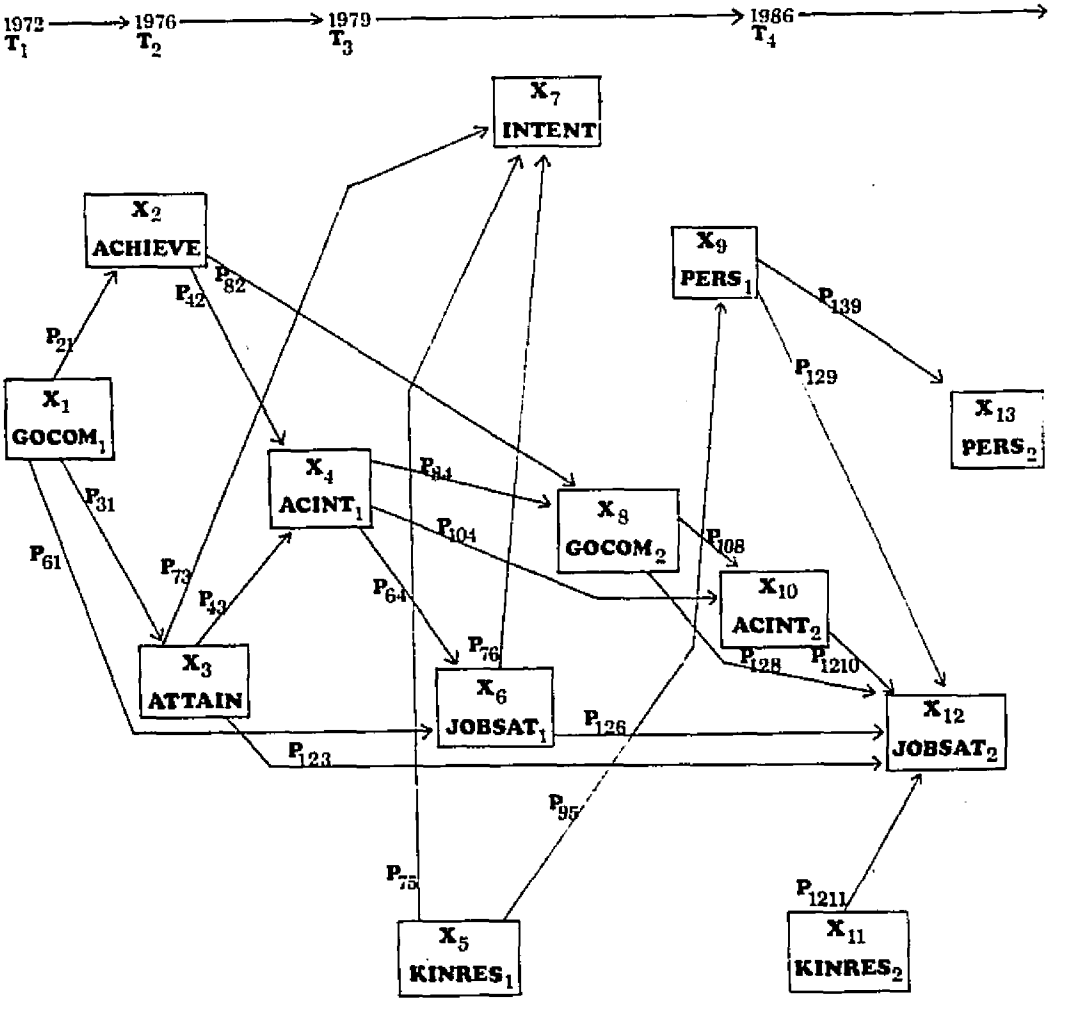


Figure 5. Reduced career persistence model showing significant direct and indirect paths

$p < .05$ level in the GEMINI analysis. This figure depicts the causal model in a more parsimonious manner.

Goal Commitment

As proposed by the causal model, goal commitment-1 had significant direct effects on both academic achievement and attainment while in college and on job satisfaction-1 early in career. Not always a positive effect, goal commitment affected early job satisfaction inversely. Thus the higher the pre-college goal commitment to a career in nursing the lower the degree of job satisfaction reported in the first three years of work. When sampled in 1986, goal commitment-2 had no significant effects on any other specified variable.

Goal commitment-1 indirectly affected academic integration. This transmission demonstrates the impact of pre-college goal commitment on academic integration mediated by the level of college achievement. Goal commitment-2 measured in 1979 had no significant indirect effects on any variables.

Academic Achievement

Achievement, represented by college grade point average (GPA), had a positive effect on the level of academic integration of the individual nurse. The positive indirect effects of achievement on job satisfaction-1 through academic integration and academic integration-2 eleven years later were mediated by paths which pass through the variables goal commitment-2 and academic integration-1.

That is, eleven years after college this same variable indirectly affects the individual's perception of academic integration-2 and job satisfaction. Goal commitment-2 and earlier measurements of academic integration intervene during this indirect process. The coefficient of determination for academic achievement was .02; 2 percent of its variance was explained by goal commitment.

Educational Attainment

The level of attainment of the individual nurse had direct positive effects on intention and academic integration-1 (1979 sampling) and on job satisfaction-2 (1986 sampling). These results imply that the higher the level of education for the nurse, the higher the level of intention and academic integration three years after graduation and the higher the level of job satisfaction eleven years after graduation.

Attainment indirectly affected job satisfaction-1 through the individuals perceived academic integration-1. These findings imply that the higher the degree obtained, the higher the satisfaction early in career--as mediated by the individual's higher perceived value of the importance of past education to current occupation. Six percent of the variance for this variable was explained by goal commitment-1.

Academic Integration

Academic integration-1 directly and positively affected job satisfaction-1 and the 1986 measurement of academic

integration-2. When this variable was remeasured in 1986 as academic integration-2, it directly affected the level of individual job satisfaction-2. Thus, the importance of early academic integration in both job satisfaction and continued educational integration are demonstrated.

The indirect effects for academic integration-1 were indicated for job satisfaction-2 and intention. Job satisfaction-2 (1986) was affected through academic integration-2 and job satisfaction-1. This complex causal sequence demonstrates the influence of continued high levels of academic integration in job satisfaction throughout the career. The remaining indirect effect of academic integration-1 on the variable of intention is negative and reveals that even in the presence of high academic integration, decreased levels of job satisfaction lower the reported intent to stay in career. It was determined that 8 percent of the variance for this variable was explained by the independent variables.

Kinship Responsibility

Kinship responsibility-1 had a direct negative effect on both intention and persistence-1. Thus the nurse with a higher degree of early kinship responsibility had both a lower level of intention to remain in career and of persistence in career. In contrast, kinship responsibility -2 had a direct positive effect on job satisfaction-2. As this variable is exogenous to the causal model, it had no indirect effects.

Job Satisfaction

Job satisfaction-1 had a direct positive effect on job satisfaction-2. Consequently, individuals who are satisfied with their jobs early in career appear to remain satisfied. Yet, individual nurses who have a higher degree of job satisfaction-1 report a lower level of intention to continue in career; job satisfaction-1 had a direct negative effect on intention. There were no indirect effects found for either measure of job satisfaction. The percentage of variance explained for job satisfaction was 6 percent and 14 percent, for 1979 and 1986.

Persistence

Persistence-1 was the only direct predictor of persistence-2; it also was predictive of job satisfaction-2. Thus early persistence affects both later job satisfaction and career persistence. Nurses who are employed early in their career seem to remain satisfied with their careers and remain employed. There were no indirect effects for this variable.

The number of nurses who reported working full or part time as a registered nurse in 1979 was 165, or 61.1 percent of the sample. In 1986, even with the large number of nurses missing from the sample, 64.5 percent of the 201 nurses reported that they were employed as RNs. There was no significant difference between employment figures for either sampling of persistence for level of educational attainment--nurses of all preparations were likely to be

working at a similar rate. Thus 7 percent of the variance for persistence-2 was explained by the independent variables in the model.

Summary

This chapter has presented the results of the analyses of the causal model of career persistence. The sample was described and demographic comparisons were discussed for both 1979 and 1986. The next chapter will give an overview of the research study, discuss the results, give conclusions, and make recommendations.

Chapter 5

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

Summary

The intention of this dissertation was to evaluate the generalization of Tinto's (1987) theoretical model. Tinto's model was originally intended to predict departure from college, whereas in the current study the theoretical model was used to predict career departure. His model is ultimately based on two classic theories from the social sciences--van Gennep's Rites of Passage (1908/1960) and Durkheim's Suicide (1897/1951). The model also incorporates more general concepts from theories of socialization and person-environmental fit. Through the blending of some diverse concepts Tinto has developed a unique explanation for departure from an institution (1975, 1982, 1987).

Although Tinto's model concentrates on internal interactions within an institution of higher education, the theory acknowledges the existence of phenomena external to the institution that may affect an individual's decision regarding departure. The basic premise of Tinto's theory is that the departure of an individual is the result of the decreased integration between an individual and an institution. He purports that individuals enter an institution with certain attributes, intentions, and commitments that are subject to alteration as the individual

moves through the college process. Finally, the alteration of intentions and commitments by environmental sources can lead to departure if social and academic integration decrease.

The purposes for the application of Tinto's model to career departure are to test the model empirically in another setting and, therefore, to generalize his theory. Concepts of the Tinto model were used within a longitudinal design for the expanded model (See Chapter 1, Figures 1 and 2). The expanded model, the career persistence model, assumes that the preoccupational attributes of academic achievement and educational attainment are a function of precollege goal commitment. These variables, together with external commitments, continue to affect the individual's job satisfaction, intentions, academic integration, goal commitment, and, ultimately, persistence throughout the potential career span.

Social integration, an integral part of Tinto's model, was not tested as a separate variable in this theory extension, but as part of the measure of job satisfaction. The job satisfaction measures in the National Longitudinal Study-1972 (NLS-72) contained a single item that attempted to measure social interaction in the work setting--the pride and respect that I receive from my family and friends by being in this line of work (See Table 1, Chapter 3). The social integration item was left as part of the job satisfaction scale by the investigator after the factor

analysis supported its conceptual tie to the other job satisfaction measures.

To test the career persistence model, a sample of 270 registered nurses (RNs) who were participants in the NLS-72 was studied. These RNs were followed from 1972, when they were seniors in high school, through the Fifth Follow-Up in 1986. By 1986 these RNs had been eligible for employment for approximately ten years. This sample was predominately white females, but contrary to the literature for nurses educated from the 1950s to the 1980s, these nurses were mostly educated in baccalaureate (BS) programs (Aiken, 1983; Munro; 1979; Simpson, 1979; Thorner, 1955). This may be explained by the fact that many non-BS nurses enter these programs later in life and would not be with this cohort.

The analyses of data were completed with a FORTRAN 77 program, GEMINI (Wolfle & Ethington, 1985), that examines recursive causal models with fifteen or less variables. The program calculates indirect and direct effects, the standard errors of these effects, and the overall significance of individual and total effects of a specified model.

The study tested an extension of a theoretical model using three exogenous variables (goal commitment-1, kinship responsibility-1 and -2) and ten endogenous variables (academic achievement, educational attainment, academic integration-1 and -2, intention, job satisfaction-1 and -2, goal commitment-2, and persistence-1 and -2). The career persistence model (See figure 3 in Chapter 1) developed for

and tested in the current study investigated the hypothesized causal relationships in a longitudinal scheme among the above variables. Results of this investigation revealed many direct and indirect causal effects between intervening variables, but only persistence-1 directly affected persistence-2. Discussion of the significant effects of variables for the total career persistence model follows.

Conclusions

Goal commitment-1 had positive direct effects on academic achievement and educational attainment in college, but its effect decreased early job satisfaction. The direct effect of goal commitment on achievement and attainment and its indirect effect on academic integration support the literature on departure from higher education--commitment appears to increase success in college (Gottfredson, 1982; Munro, 1979; Pascarella, Brier, Smart, & Herzog, 1987; Pascarella & Terenzini, 1980; Tinto, 1987).

Consequently, one must question why a higher level of goal commitment, academic achievement, and educational attainment lead to decreased job satisfaction. A similar finding led to speculation by Corwin, Taves, and Haas (1961). Corwin et al., derived concepts from research on job satisfaction; they found that disillusionment is a complex concept derived from role conflict. They proposed that the nurse who was a high achiever, had more education, and was more goal directed while in college reported more

dissatisfaction in career. They related decreased job satisfaction to the conflict between idealized student role and the realities of the occupational role.

Mixed effects are reported for goal commitment in the literature. In contrast to the current study, the research of Sheridan and Abelson (1983) supported the effect of commitment on career persistence. However, a majority of the literature reviewed on commitment to career reported non-conclusive or non-significant relationships between goal commitment and persistence (Werbel & Gould, 1984; Steel & Ovalle, 1984).

The lack of significant effect of goal commitment-2, measured in 1979, is not easily explained. However, based on the importance of this variable in the literature (Tinto, 1987; Pascarella & Terenzini, 1983), it seems that theoretically this is a necessary variable to be included in future tests of this model before refutation or alteration is considered. On the other hand, it is also possible that these findings are aligned with Alwin (1974) who reported that commitment had stronger effects on college completion than on occupational attainment.

The level of educational attainment obtained by the nurse leads to increased early intention to remain in nursing, early academic integration, and later job satisfaction; attainment had a non-significant effect on persistence. There was also an indirect effect of attainment on job satisfaction through academic integration.

These findings contrast with the research on disillusionment and reality shock (Corwin et al., 1961; Kramer, 1974; Schmalenberg & Kramer, 1976). The above researchers found that the nurse with the BS degree exhibited increased frustration, turnover, and departure from nursing because of conflicts between schooling and the work world. Ezrati (1987) reported that a higher level of education for the nurse lowered both hours of work and persistence in career. However other studies reported that the level of education had no effect on job satisfaction, but that nurses with diploma level preparation were more likely to resign or depart from career than nurses with associate degree (AD) or BS preparation (Nolan, 1985; Weisman, Dear, Alexander, & Chase, 1981).

In the current study, the total effects of level of attainment are relevant to the research of Smart and Ethington (1988) and their concern with the relationship between undergraduate preparation and current job. The fact that the nurse who was prepared at the highest entry level for nurses (BS) was more likely to have reported higher intent to stay in nursing, perceived a higher level of relatedness of education to current job, and experienced a higher level of job satisfaction, certainly addresses the issue of academic appropriateness for career choice.

The next variable, academic integration, has a striking effect on job satisfaction in both early and later career and continued academic integration. Reflecting the effects

of educational attainment, the perception of relatedness of academic programs to current job satisfaction remains significant. This interaction addresses the multifarious communication between variables possible within a longitudinal study. Smart and Ethington (1988), using similar methods, found that students from "applied" fields of study who are in careers concerned with "people" have a higher level of job relatedness than others.

The indirect effect of educational integration on the nurses' intent to stay in career is both hindered and overpowered by lowered job satisfaction. Consequently, determination of the nurses' degree of academic integration may be essential in future models of persistence along with meticulous investigation of job satisfaction factors.

Intention to stay in career had no significant effects on other variables in the model--yet intention is itself influenced by educational attainment, job satisfaction, kinship responsibility, and academic integration-1. An analysis of the lack of influence of intention, a theoretically important variable in previous studies (Bean, 1983; Price & Mueller, 1981, Steel & Ovalle, 1984), did provide possible explanations.

One explanation is that the questions that constituted this variable in 1979 may have served well as a dependent variable at that point in time (the projected changes of the individual working in 1980 at the same kind of work), but the same variable may not have served as a valid independent

variable in 1986. This contention conforms to findings of Fishbein and Ajzen (1975) and Steel and Ovalle (1984) who theorized that intention and behavior should be measured proximal to each other to decrease the erosion of the variable relationship. Therefore, an additional measure of intention seems essential to testing the validity of this variable as a predictor of persistence. Since the measures used for this variable were dropped from the Fifth Follow-up of NLS-72, one can conclude that the limitation imposed by the data set is likely to be the major reason for the lack of effect of intention. Another possible explanation is offered by Steel and Ovalle (1984), who theorized that intent-departure relations may be responsive to general economic fluctuations. In times of stable economy the nurse may be free to carry through with intentions to leave, but in low economic periods the nurse may have to stay in nursing in spite of low intentions. General economic conditions were not plotted for 1979 or 1986.

The merit of commitment external to career (kinship responsibility) was supported as a theoretical constituent in the model, even though it had inconsistent effects. Thus the theses of Bean (1983), Tinto (1987), and Price and Mueller (1981), which encouraged the investigation of external environmental influences on persistence, supported the current findings--higher levels of kinship responsibility do decrease intention to stay in career and persistence early in career. The previous findings contrast

with the positive effect of this variable on job satisfaction later in career. This enigmatic contrast in effects may be attributed to the low reliability of the later measurement of kinship responsibility. Better measurement of this variable may improve its utilization in future research.

The findings of early kinship responsibility's negative effects on both intention and persistence do support the research of those who have used a more limited definition of this construct, such as socioeconomic status, number of children, and marital status (Greenleaf, 1983; Link & Settle, 1980; Minnick, 1987). Consequently this is in marked contrast to the work of Price and Mueller (1981) and Ezrati (1987), who found that increased family responsibilities increase the nurses' likelihood of working in nursing. However, both of these studies looked at the effect of kinship responsibility only once with nurses considerably older than the average age for the NLS-72 participants who were 25 years old in 1979. These older nurses may have had older children and a more personal investment in the employing institution than the current group.

Results of the analyses of job satisfaction reveal perplexing findings--its major direct effects are that higher job satisfaction early in career leads to increased job satisfaction later, but decreased intent to stay in career. Neither measure of job satisfaction significantly

affected persistence. Price and Mueller (1981) also investigated the effect of job satisfaction on intent to stay in nursing; they found that high job satisfaction had the strongest influence on intent, but no significant effect on turnover. Comparison of this construct with the literature is difficult because of the lack of consistent definitions for job satisfaction.

Persistence in later career is related to persistence in early career. This finding, which can only come from the analysis of longitudinal data, conforms with the topology of "pushes and pulls in and out of the labor market" used as a theoretical base by Greenleaf (1983). She found that the longer one is employed in an occupation, the higher the pulls are to remain in the labor market. She contends that this is related to increased personal investment in the system.

The work participation rate for the nurses in this study was 61.1 percent in 1979 and 64.5 percent in 1986, which is approximately 20 percent lower than shown in studies that counted only currently registered nurses in their findings (Aiken & Mullinix, 1987). This supports the contention that for an accurate calculation of labor force participation all nurses who have completed preparatory courses leading to a diploma, associate degree, or baccalaureate degree should be assessed, not only those who maintain their licensure status (Greenleaf, 1983).

In summary, this study sought to extend a theoretical model developed to predict departure from higher education to a new dimension--career. Assumptions of this process were that concepts identified within the Tinto Model (1987) could be expanded because of its rational theoretical base and that the degree of confidence in the basic theory would be increased as a result of this extension. It should be noted that this theoretical base may be better expanded to career studies in professional fields where there is academic preparation leading to high levels of social and academic integration in the college years. Nursing was studied in this research, but other career fields that use professional socialization in the college curriculum might be studied in the future. For example the fields of medicine, dentistry, physical therapy, medical technology, and occupational therapy might be studied.

The results of the study reveal that goal commitment, as hypothesized, does have positive direct effects on the preoccupational attributes of achievement and attainment in college. On the other hand, long term effects of this variable were not demonstrated. The degree of academic integration has major importance across time as a contributor to job satisfaction, but not persistence in career. Despite the passing of seven years, goal commitment, preoccupational attributes, academic integration, and kinship responsibilities did impact on intent to remain in career and job satisfaction. Intention

and a later measurement of goal commitment did not influence other variables in the temporal order as hypothesized. However, early job satisfaction and persistence did influence later measures of themselves in this longitudinal study.

The results of the study demonstrate the importance of employing analytical methods that allow investigation of the significance of indirect effects within a model. For example, the lack of interpretation of indirect effects may have led to the incorrect conclusion that academic integration did not have an effect on intent to stay in career. Consequently, the relationship of academic integration and job satisfaction also may have been ignored.

Although the present study concentrated on the direct and indirect effects of the causal model, an additional concern was the explanation of variation of departure from nursing. The career persistence model predicted 7 percent of the variance for persistence-2. In the final estimation, the interpretation of the generalization of the Tinto model to career departure is not supported very well in the current study. Because of the severe limitation imposed by the data base used for the project, it is clear that further testing of this application must be attempted before the generalization of the theoretical model is supported or refuted. However the variance explained for this study is close to other studies of persistence in nursing, such as the regression analyses which revealed 2 percent for the

Sheridan and Abelson (1983) cusp catastrophe study and the 6 percent for the Werbel and Gould (1984) study on commitment, but lower than the 18 percent for the Price and Mueller (1981) causal model on nurse turnover. Recommendations for ways to increase the explained variance will be discussed in the next section.

The Tinto model has been shown to be empirically relevant to the issues of not only career persistence, but associated concerns of job satisfaction, integration of college experiences in career, and external commitments. The direct and indirect effects of a set of variables, through time, have been clarified both theoretically and temporally by the present theory extension.

Implications and Recommendations

1. The investigator recommends further research in highly socialized professional fields to continue the generalization of Tinto's model to career study. Because the hypothesized model required a longitudinal application for proper investigation, secondary data were used for the current study. The NLS-72 represented a data set that met this requirement. However, the limitations imposed when a secondary data set is used may necessitate the use of investigator controlled longitudinal collections in future applications. For example, the NLS-72 data base remained stable through the 1979 follow-up, but many variables required for this project were changed or were dropped for the 1986 collection because of both a change of contractor

and scope of the study. However, it should be noted that the use of a cross-sectional design is not suggested as it would further confound the interpretation of this model through a lack of clear differentiation of change between groups and group change over time (Rogosa, 1979).

2. The results have further implications for educators in professional schools. The perceptions of the degree of academic integration by graduates as they progress in their careers appear to have a vital link to job satisfaction and intent to stay in career, and perhaps to persistence. It is recommended that these measures become a routine part of the evaluation process for professional schools.

3. Certainly without the use of NLS-72 as the data base, the research could include the gathering of qualitative information to further elaborate on questions raised in this study. Qualitative information would increase the meaningfulness and comprehensiveness of the quantitative analysis. This information could be gathered through open-ended questions which would allow the participant to respond without the constraints of forced response questions. This combination of techniques would be especially important in exploring questions not fully answered by the NLS-72. These questions might include: (a) why nurses persist in or depart from career, (b) the effect on persistence of social integration in the work setting, (c) further investigation

of the relatedness of education to occupation, (d) using measures of job satisfaction more appropriate to nursing, (e) environmental variables in the work setting, and (f) job performance variables.

Appendix A

Structural Equations for Direct and Indirect Effects

Variables	Direct Effects	Indirect Effects
X_1 to X_2	P_{21}	
X_1 to X_3	P_{31}	
X_1 to X_4	P_{41}	$P_{42}P_{21} + P_{43}P_{31}$
X_2 to X_4	P_{42}	
X_3 to X_4	P_{43}	
X_1 to X_6	P_{61}	$P_{64}P_{42}P_{21} + P_{63}P_{31} + P_{64}P_{41}$
X_2 to X_6	P_{62}	$P_{64}P_{42}$
X_3 to X_6	P_{63}	$P_{64}P_{43}$
X_4 to X_6	P_{64}	
X_5 to X_6	P_{65}	
X_1 to X_7	P_{71}	$P_{74}P_{42}P_{21} + P_{74}P_{41} + P_{74}P_{42}P_{21} + P_{73}P_{31} + P_{72}P_{21}$
X_2 to X_7	P_{72}	$P_{76}P_{64}P_{41} + P_{74}P_{42}$
X_3 to X_7	P_{73}	$P_{76}P_{63} + P_{74}P_{43}$
X_4 to X_7	P_{74}	$P_{76}P_{64}$
X_5 to X_7	P_{75}	$P_{76}P_{65}$
X_6 to X_7	P_{76}	
X_1 to X_8	P_{81}	$P_{87}P_{74}P_{41} + P_{86}P_{63}P_{31} + P_{84}P_{41} + P_{83}P_{31} + P_{82}P_{21}$
X_2 to X_8	P_{82}	$P_{87}P_{72} + P_{87}P_{74}P_{42} + P_{86}P_{64}P_{42} + P_{86}P_{62} + P_{84}P_{42}$
X_3 to X_8	P_{83}	$P_{87}P_{76}P_{63} + P_{87}P_{74}P_{43} + P_{86}P_{63} + P_{86}P_{64}P_{43} + P_{84}P_{43}$

Appendix A (Continued)

Structural Equations for Direct and Indirect Effects

Variables	Direct Effects	Indirect Effects
X_4 to X_8	P_{84}	$P_{87}P_{74} + P_{86}P_{64}$
X_5 to X_8	P_{85}	$P_{86}P_{65}$
X_6 to X_8	P_{86}	$P_{87}P_{76}$
X_7 to X_8	P_{87}	
X_1 to X_9	P_{91}	$P_{98}P_{87}P_{72}P_{21} + P_{98}P_{86}P_{61} + P_{98}P_{86}P_{63}P_{31} + P_{97}P_{74}P_{41} + P_{97}P_{72}P_{21} + P_{97}P_{71} + P_{94}P_{41} + P_{93}P_{31} + P_{92}P_{21}$
X_2 to X_9	P_{92}	$P_{97}P_{72} + P_{98}P_{84}P_{42} + P_{98}P_{87}P_{72} + P_{97}P_{74}P_{42} + P_{96}P_{62} + P_{96}P_{64}P_{42} + P_{94}P_{42}$
X_3 to X_9	P_{93}	$P_{98}P_{86}P_{63} + P_{98}P_{84}P_{43} + P_{97}P_{74}P_{43} + P_{97}P_{73} + P_{96}P_{63} + P_{94}P_{43}$
X_4 to X_9	P_{94}	$P_{98}P_{84} + P_{97}P_{74} + P_{96}P_{64} +$
X_5 to X_9	P_{95}	$P_{98}P_{87}P_{75} + P_{98}P_{85} + P_{98}P_{87}P_{76}P_{65} + P_{97}P_{76}P_{65}$
X_6 to X_9	P_{96}	$P_{98}P_{87}P_{76} + P_{98}P_{86} + P_{97}P_{76}$
X_7 to X_9	P_{97}	$P_{98}P_{87}$
X_8 to X_9	P_{98}	
X_1 to X_{10}		$P_{109}P_{92}P_{21} + P_{108}P_{87}P_{72}P_{21} + P_{108}P_{87}P_{71} + P_{108}P_{86}P_{61} + P_{108}P_{84}P_{41} + P_{108}P_{86}P_{63}P_{31} + P_{108}P_{84}P_{43}P_{31} + P_{102}P_{21} + P_{104}P_{43}P_{31} + P_{104}P_{41} + P_{103}P_{31}$
X_2 to X_{10} P_{102}		$P_{109}P_{92} + P_{109}P_{97}P_{72} + P_{108}P_{84}P_{42} + P_{108}P_{82} + P_{108}P_{86}P_{64}P_{42}$
X_3 to X_{10} P_{103}		$P_{109}P_{93} + P_{109}P_{97}P_{73} + P_{109}P_{98}P_{83} + P_{108}P_{84}P_{43} + P_{108}P_{83}$
X_4 to X_{10} P_{104}		$P_{109}P_{94} + P_{108}P_{84} + P_{108}P_{86}P_{64} + P_{109}P_{98}P_{84}$
X_5 to X_{10}		$P_{108}P_{85} + P_{109}P_{98}P_{85} + P_{108}P_{86}P_{65}$

Appendix A (Continued)

Structural Equations for Direct and Indirect Effects

Variables	Direct Effects	Indirect Effects
X_6 to X_{10}		$P_{108}P_{86} + P_{109}P_{98}P_{86}$
X_7 to X_{10}		$P_{109}P_{97} + 108P_{97}$
X_8 to X_{10}	P_{108}	$P_{109}P_{98}$
X_9 to X_{10}	P_{109}	
X_1 to X_{12}		$P_{1210}P_{108}P_{84}P_{41} + P_{1210}P_{108}P_{81} + P_{1210}P_{109}P_{92}P_{21} + P_{1210}P_{104}P_{41} + P_{1210}P_{108}P_{82}P_{21} + P_{129}P_{97}P_{71} + P_{128}P_{84}P_{41} + P_{128}P_{83}P_{31} + P_{126}P_{61} + P_{126}P_{63}P_{31} + P_{123}P_{31} + P_{122}P_{21}$
X_2 to X_{12}	P_{122}	$P_{1210}P_{108}P_{84}P_{42} + P_{1210}P_{108}P_{86}P_{62} + P_{1210}P_{108}P_{86}P_{64}P_{42} + P_{1210}P_{108}P_{86}P_{62} + P_{129}P_{97}P_{72} + P_{129}P_{94}P_{42}$
X_3 to X_{12}	P_{123}	$P_{1210}P_{108}P_{86}P_{63} + P_{1210}P_{108}P_{84}P_{43} + P_{1210}P_{108}P_{86}P_{63} + P_{129}P_{94}P_{43} + P_{129}P_{93} + P_{129}P_{98}P_{83} + P_{129}P_{97}P_{76}P_{63}$
X_4 to X_{12}		$P_{1210}P_{108}P_{84} + P_{128}P_{84} + P_{1210}P_{104} + P_{126}P_{64} + P_{128}P_{86}P_{64} + P_{129}P_{94} + P_{129}P_{98}P_{84}$
X_5 to X_{12}		$P_{1210}P_{108}P_{85} + P_{1210}P_{109}P_{95} + P_{1210}P_{109}P_{98}P_{85} + P_{129}P_{95}$
X_6 to X_{12}	P_{126}	$P_{1210}P_{108}P_{86} + P_{129}P_{96} + P_{129}P_{98}P_{86} + P_{127}P_{76} + P_{129}P_{97}P_{76}$
X_7 to X_{12}	P_{127}	$P_{129}P_{97} + P_{1210}P_{108}P_{87} + P_{1210}P_{109}P_{97}$
X_8 to X_{12}	P_{128}	$P_{1210}P_{108} + P_{129}P_{98}$
X_9 to X_{12}	P_{129}	$P_{1210}P_{109}$
X_{10} to X_{12}	P_{1210}	
X_{11} to X_{12}	P_{1211}	
X_1 to X_{13}	P_{131}	$P_{1312}P_{126}P_{61} + P_{1312}P_{126}P_{63}P_{31} + P_{1310}P_{108}P_{84}P_{41} + P_{138}P_{84}P_{41}$

Appendix A (Continued)

Stuructural Equations for Direct and Indirect Effects

Variables	Direct Effects	Indirect Effects
X_2 to X_{13}	P_{132}	$P_{1312}P_{1210}P_{108}P_{82} + P_{1312}P_{128}P_{82} + P_{1312}P_{1210}P_{102} + P_{1312}P_{1210}P_{108}P_{87}P_{72} + P_{1312}P_{1210}P_{108}P_{84}P_{42} + P_{1312}P_{122} + P_{1310}P_{102} + P_{1310}P_{108}P_{84}P_{42} + P_{1310}P_{108}P_{82} + P_{139}P_{97}P_{72} + P_{138}P_{82} + P_{138}P_{84}P_{42} + P_{137}P_{72}$
X_3 to X_{13}	P_{133}	$P_{1312}P_{123} + P_{1312}P_{126}P_{62} + P_{1312}P_{1210}P_{103} + P_{1312}P_{1210}P_{108}P_{83} + P_{1312}P_{128}P_{83} + P_{1312}P_{128}P_{84}P_{43} + P_{1310}P_{103} + P_{1310}P_{108}P_{83} + P_{1310}P_{108}P_{84}P_{43} + P_{139}P_{93} + P_{139}P_{94}P_{43} + P_{139}P_{98}P_{83} + P_{139}P_{98}P_{84}P_{43} + P_{139}P_{97}P_{73} + P_{139}P_{97}P_{74}P_{43} + P_{139}P_{96}P_{63} + P_{138}P_{84}P_{43} + P_{138}P_{83} + P_{138}P_{86}P_{63} + P_{138}P_{84}P_{43} + P_{137}P_{73} + P_{137}P_{74}P_{43}$
X_4 to X_{13}		$P_{1312}P_{1210}P_{104} + P_{1312}P_{1210}P_{108}P_{84} + P_{1312}P_{129}P_{98}P_{84} + P_{1312}P_{129}P_{94} + P_{1312}P_{128}P_{84} + P_{1312}P_{127}P_{74} + P_{1312}P_{126}P_{64} + P_{1310}P_{104} + P_{1310}P_{108}P_{84} + P_{1310}P_{109}P_{94} + P_{1310}P_{109}P_{98}P_{84} + P_{139}P_{94} + P_{139}P_{97}P_{74} + P_{139}P_{98}P_{84} + P_{138}P_{84} + P_{137}P_{74}$
X_5 to X_{13}		$P_{1312}P_{126}P_{65} + P_{1312}P_{1210}P_{108}P_{85} + P_{1312}P_{1210}P_{108}P_{85} + P_{1312}P_{128}P_{86}P_{65} + P_{1312}P_{129}P_{95}$
X_6 to X_{13}		$P_{1312}P_{126} + P_{1310}P_{108}P_{86} + P_{139}P_{96} + P_{139}P_{97}P_{76} + P_{139}P_{98}P_{86} + P_{138}P_{86} + P_{137}P_{76}$
X_7 to X_{13}	P_{137}	$P_{1312}P_{1210}P_{109}P_{97} + P_{1312}P_{1210}P_{109}P_{97} + P_{1312}P_{127} + P_{1312}P_{1210}P_{108}P_{87} + P_{1310}P_{108}P_{87} + P_{1310}P_{109}P_{97} + P_{139}P_{97} + P_{138}P_{87}$
X_8 to X_{13}	P_{138}	$P_{1312}P_{128} + P_{1312}P_{1210}P_{108} + P_{1312}P_{129}P_{98}$
X_9 to X_{13}	P_{139}	$P_{1312}P_{129} + P_{1312}P_{1210}P_{109} + P_{1310}P_{109}$
X_{10} to X_{13}	P_{1310}	$P_{1312}P_{1210}$
X_{11} to X_{13}	P_{1311}	
X_{12} to X_{13}	P_{1312}	

Appendix B

Goal Commitment-1

1. Circle the one number in the column that goes with the best description of the kind of work you would like to do. The exact job may not be listed but circle the one that comes closest.

Circle	Score	
CLERICAL such as bank teller, bookkeeper	01	0
CRAFTSMAN such as baker, carpenter	02	0
FARMER, FARM MANAGER	03	0
HOMEMAKER OR HOUSEWIFE	04	0
LABORER such as construction worker	05	0
MANAGER, ADMINSTRATOR such as sales manager	06	0
MILITARY such as career officer, enlisted	07	0
OPERATIVE such as career officer, enlisted	08	0
PROFESSIONAL such as accountant or registered nurse	09	1
PROPRIETOR OR OWNER	10	0
PROTECTIVE SERVICE such as policeman	11	0
SALES	12	0
SERVICE such as barber, practical nurse	13	0
TECHNICAL such as draftsman	14	0

Scale: 1 equals goal commitment to nursing 0 without goal commitment to nursing.

Riccobono, J., Henderson, L. B., Burkeimer, G. J., Place, C. and Levinsohn, J. R. (1981). National longitudinal study: Base year (1972) through fourth follow-up (1979). Data file users manual. Vol. I. Research Triangle Park, N.C.: Center for Educational Research and Evaluation.

Appendix C

Goal Commitment-2

1. What kind of work will you be doing when you are 30 years old? (Circle the one that comes closest to what you expect to be doing).

I. PROFESSIONAL such as registered nurse 1

All other responses for this question will receive a 0.

Riccobono, J., Henderson, L. B., Burkeimer, G. J., Place, C. and Levinsohn, J. R. (1981a). National longitudinal study: Base year (1972) through fourth follow-up (1979). Data file users manual. Vol. I. Research Triangle Park, N.C.: Center for Educational Research and Evaluation.

Appendix D

Intention

1. Do you expect to be working in October 1980?
(Circle one).

No. 1
Don't know. 2
Yes 3

2. Do you plan to work at the same kind of work?
(Circle one).

Yes 3
Don't know. 2
No. 1

Scale:	Questions		Score
	34	35	
	3	3	5
	3	2	4
	3	-	3
	1	-	2
	1	3	1

Riccobono, J., Henderson, L. B., Burkeimer, G. J., Place, C., and Levinsohn, J. R. (1981a). National longitudinal study: Base year (1972) through fourth follow-up (1979). Data file users manual. Vol. I. Research Triangle Park, N.C.: Center for Educational Research and Evaluation.

Appendix E

Academic Integration-1

1. How did your schooling relate to your experiences on the job?

		Circle one		
		My Experience		NOT my Experience
a.	I was able to apply most of what I learned in school	1	. . . . .	0
b.	I would have liked more job related training before I started working	0	. . . . .	1
c.	The way the job was done was different than I was trained	0	. . . . .	1
d.	I did not use, on the job, the tools or equipment I was trained to use	0	. . . . .	1
e.	I could have gotten my job without the training	0	. . . . .	1
f.	I realized that I had taken coursework associated with my training which was not helpful in performing my job	0	. . . . .	1
g.	Most of what I did on the job I learned in school	1	. . . . .	0
h.	I considered myself to do as well as others with similar training	1	. . . . .	0
i.	I considered going to school and getting the training that I did a good choice	1	. . . . .	0

Scale: 9 to 0. The higher the score, the higher the educational integration.

Appendix E (Continued)

Academic Integration-1

3. Which of the following statements describes your experience during your last year in school?

	my experience	not me
e. I found the course work interesting	1.	.0
g. I learned a great deal from the education or training	1.	.0

4. With regard to your education and training during the last year you were in school, how satisfied as a whole were you with the following.

	Circle one number on each line VS	SS	NO	SD	VD
a. The ability, knowledge, and personal qualitities of most teachers	.4.	.3.	.0.	.2.	.1
b. Development of work skills.	.4.	.3.	.0.	.2.	.1
c. My intellectual growth.	.4.	.3.	.0.	.2.	.1
d. Course curriculum	.4.	.3.	.0.	.2.	.1
e. The quality of instruction.	.4.	.3.	.0.	.2.	.1
f. The prestige of the school.	.4.	.3.	.0.	.2.	.1

Scale: 24 high and 0 low.

Scale for conduct: Highest possible score is 35, lowest is 0. The scale is: 35-28 = 5, 27-20 = 4, 19-15 = 3, 14-7 = 2, 6-0 = 1. The higher the score the more academically integrated the individual.

Riccobono, J., Henderson, L. B., Burkeimer, G. J., Place, C., and Levinsohn, J. R. (1981a). National longitudinal study: Base year (1972) through fourth follow-up (1979). Data file users manual. Vol. I. Research Triangle Park, N.C.: Center for Educational Research and Evaluation.

Appendix F

Academic Integration-2

1. Which of the following statements describes your experience during your last year in school?

	my experience	not me
e. I found the course work interesting . . .	1.	.0
g. I learned a great deal from the education or training	1.	.0

2. With regard to your education and training during the last year you were in school, how satisfied as a whole were you with the following.

	Circle one number on each line				
	VS	SS	NO	SD	VD
a. The ability, knowledge, and personal qualities of most teachers . .	.4.	.3.	.0.	.2.	.1
b. Development of work skills.	.4.	.3.	.0.	.2.	.1
c. My intellectual growth.	.4.	.3.	.0.	.2.	.1
d. Course curriculum	.4.	.3.	.0.	.2.	.1
e. The quality of instruction.	.4.	.3.	.0.	.2.	.1
f. The prestige of the school.	.4.	.3.	.0.	.2.	.1

Scale: 24 high and 0 low.

Scale for construct: High of 26; low of 0. 26-21 = 5, 20-16 = 4, 15-11 = 3, 10-6 = 2, 5-1 = 1, and 0 = 0.

Tourangeau, R., Sebring, P., Campbell, B., Glusberg, M., Spencer, B., and Singleton, M. (1987). The national longitudinal study of the high school class of 1972 (NLS-72) fifth follow-up (1986). Data file user's manual. Chicago: National Opinion Research Center.

Appendix G

Job Satisfaction-1

1. How satisfied were you with the following aspects of this job?

(Circle one number on each line)

		VS	S	D	VD
A.	Pay	4	3	2	1
B.	Fringe benefits	4	3	2	1
C.	Importance and challenge	4	3	2	1
D.	Working conditions	4	3	2	1
E.	Opportunity for promotion and advancement with this employer	4	3	2	1
F.	Opportunity for promotion and advancement in this line of work	4	3	2	1
G.	Opportunity to use past training and education	4	3	2	1
H.	Security and permanence	4	3	2	1
I.	Supervisor(s)	4	3	2	1
J.	Opportunity for developing new skills	4	3	2	1
K.	Job as a whole	4	3	2	1
L.	The pride and respect I received from my family and friends by being in this line of work	4	3	2	1

Scale: 48 highest and 12 lowest.
Construct Scale: 48-42 = 5, 41-53 = 4, 34-28 = 3, 27-20 = 2, and 19-12 = 1.

Tourangeau, R., Sebring, P., Campbell, B., Glusberg, M., Spencer, B., and Singleton, M. (1987). *The national longitudinal study of the high school class of 1972 (NLS-72) fifth follow-up (1986). Data file user's manual.* Chicago: National Opinion Research Center.

Appendix H

Job Satisfaction-2

1. How satisfied were you with the following aspects of your present or most recent job?

		(Mark one for each line) VS	S	NO	D	VD
a.	Pay and fringe benefits	4	3	0	2	1
b.	Importance and challenge	4	3	0	2	1
c.	Working conditions	4	3	0	2	1
d.	Opportunity for advancement and promotion with this employer	4	3	0	2	1
e.	. . . .in this line of work	4	3	0	2	1
f.	Opportunity to use past training and education	4	3	0	2	1
g.	Security and permanence	4	3	0	2	1
h.	Supervisor(s)	4	3	0	2	1
i.	Opportunity for developing new skills	4	3	0	2	1
j.	The pride and respect that I receive from my family and friends by being in this line of work	4	3	0	2	1
l.	Job as a whole	4	3	0	2	1

Scale: 0 to 44.

Construct Scale: 44-36 = 5, 35-27 = 4, 26-18 = 3, 17-8 = 2, 7 = 0 = 1

Tourangeau, R., Sebring, P., Campbell, B., Glusberg, M., Spencer, B., and Singleton, M. (1987). The national longitudinal study of the high school class of 1972 (NLS-72) fiflth follow-up (1986). Data file user's manual. Chicago: National Opinion Research Center.

Appendix I

Kinship Responsibility-1

165. What was your marital status the first week of October 1979? (Circle one).

		Scale
Never married, but plan to be married with the next 12 months	1	1
Never married, and don't plan to be married within the next 12 months	2	1
Divorced, widowed, separated	3	2
Married to my first husband or wife	4	2
Remarried after being divorced or widowed	5	2

176. Did you have children (including adopted children) as of the first week of October 1979? (Circle one.)

		Scale
No	1	0
Yes	2	1

177. How many (including adopted children) did you have as of the first week of October 1979? (Circle one.)

1 . . . 2 . . . 3 . . . 4 . . . 5 . . . 6 or more

Scale: Additive Scale, the higher the total, the higher the Kinship responsibility. Range of 18 to 1.

Riccobono, J., Henderson. L. B., Burkeimer, G. J., Place, C, and Levinsohn, J. R. (1981a). National Longitudinal Study: Base Year (1972) through Fourth Follow-Up (1979). Date File Users Manual. Vol. I. Research Triangle Park, N.C.: Center for Educational Research and Evaluation.

Appendix J

Kinship Responsibility-2

77. What was your marital status the first week of February 1986? (Circle one).

		Scale
Divorced	.01	2
Widowed	.02	2
Separated	.03	2
Not married but living in a marriage-like relationship	.04	2
Married	.05	2
Not married	.06	1

84. As of the first week of February 1986, how many . . . . (WRITE IN NUMBER FOR EACH. IF NONE, ENTER "0")

natural children have you ever had?	___	___
adopted children have you ever had?	___	___
step-children have you ever had?	___	___

103. Please think about the financial arrangements you have with other persons in your household. Read the descriptions below and MARK the one which most closely matches your arrangement (MARK ONE)

		Scale
0	People combine their incomes and this money is used to pay most household expenses	1
0	One person provides almost all the income	2
0	Each person pays for most of his or her own expenses	2
0	not applicable because I live alone	2

104. If you combine your money, which household members share their income with the rest of the household? (MARK ALL THAT APPLY)

Scale 1	0	0	0
0 You	0 Spouse or live in partner	0 Parents	0 other

Construct Scale: The higher the total points, the higher the kinship responsibility.

Tourangeau, R., Sebring, P., Campbell, B., Glusberg, M., Spencer, B., and Singleton, M. (1987). The national longitudinal study of the high school class of 1972 (NLS-72) fifth follow-up (1986). Data file user's manual. Chicago: National Opinion Research Center.

Appendix K

Persistence-1

1. What were you doing the first week of October 1979? (Circle all that apply)

	Scale
Working for pay at a full-time or part-time job	1
Homemaker	0
On temporary lay off from work, looking for work, or waiting to report to work.	0
If working full time or part time, than the following additional points will be given.	
Enrolled in graduate or professional courses.	1
Taking academic courses at a two- or four- year college	1
Taking vocational courses at any kind of school	1
Serving an apprenticeship program or government training program.	1
On active duty in the Armed Forces (or service academy).	1

12. Please describe below the job you held during the first week of October 1979, or if you did not hold a job then, the last job you held before that. (If you held more than one job at that time, describe the one at which you worked the most hours.)

c. What kind of job or occupation did you have in this business or industry? (For example, salesperson, waitress, secretary, etc.)

(Write in):_____

Scale: The individual must be employed as a registered nurse full or part time to receive "1". All other categories recieve 0.

Construct Seale: The higher the total points, the higher the kinship resposibility.

Riccobono, J., Henderson, L. B., Burkeimer, G. J., Place, C, and Levinsohn, J. R. (1981). National Longitudinal Study: Base Year (1972) through Fourth Follow-Up (1979). Data File Users Manual. Vol. I. Research Triangle Park, N.C.: Center for Educational Research and Evaluation.

Appendix L

Persistence-2

1. What were you doing the first week of February 1986? (Circle all that apply)

	Scale
Working for pay at a full-time or part-time job	1
Keeping house (without other job)	0
On temporary lay off from work or waiting to report to work.	0
Looking for work.	0
Taking a break from working and from school	0
If working full time or part time, than the following additional points will be given.	
Taking academic courses at a two- or four- year college	1
Enrolled in graduate or professional courses.	1
Taking vocational courses at any kind of school	1
Serving an apprenticeship program or government training program.	1
On active duty in the Armed Forces (or servie academy	1

7. CURRENT OR MOST RECENT JOB HELD SINCE OCTOBER 1979.

A. What kind of job or occupation did you or do you have? (For example, salesperson, waitress, secretary, assembler, etc.) WRITE IN

_____

Scale: The individual must be employed as a registered nurse full or part time to receive "1". All other categories receive 0.

Tourangeau, R., Sebring, P., Campbell, B., Glusberg, M., Spencer, B., and Singleton, M. (1987). The national longitudinal study of the high school class of 1972 (NLS-72) fifth follow-up (1986). Data file user's manual. Chicago: National Opinion Research Center.

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Title of Dissertation: Extending a Theoretical Model: Nursing Career Departure

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